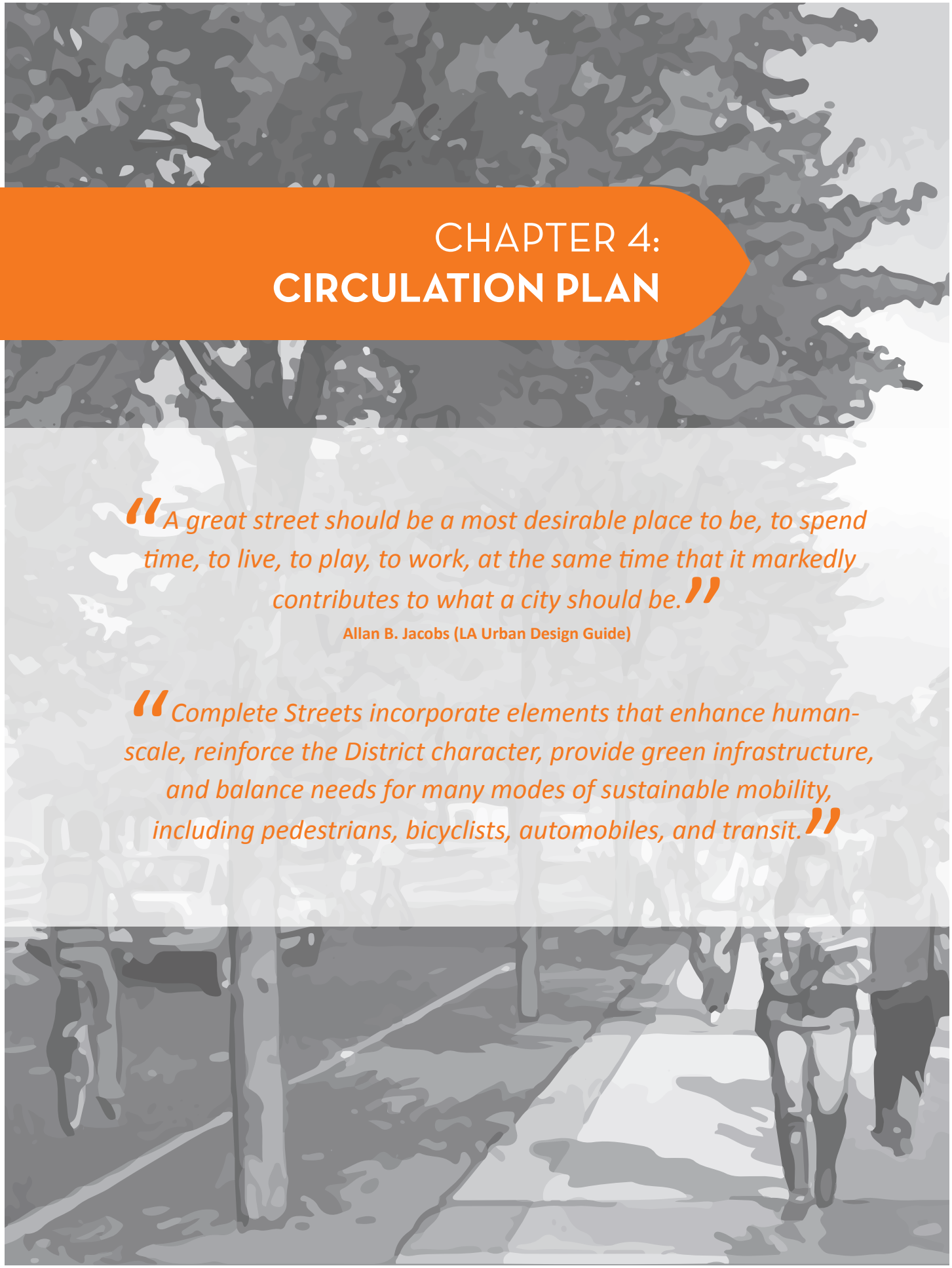


CHAPTER 4:
CIRCULATION PLAN

"A great street should be a most desirable place to be, to spend time, to live, to play, to work, at the same time that it markedly contributes to what a city should be."

Allan B. Jacobs (LA Urban Design Guide)

"Complete Streets incorporate elements that enhance human-scale, reinforce the District character, provide green infrastructure, and balance needs for many modes of sustainable mobility, including pedestrians, bicyclists, automobiles, and transit."

4.1. A Multi-modal Approach

4.1.1. Establishing a Framework of Pedestrian-Friendly Thoroughfares

The UI District's multi-modal thoroughfare framework establishes the backbone of the District. This system extends existing and planned roads, trails, and transit from adjacent villages and provides internal connections to serve the District. This Chapter describes how this system accommodates all users.

Streets within the SPA are designed as "complete" streets. Complete streets are roadways that are designed, operated, and maintained to enable safe, convenient, and comfortable travel and access for users of all ages and abilities regardless of their mode of transportation. Transportation modes are any form of transportation other than a private car including, but not limited to, bicycling, walking, low speed electric vehicles, vanpooling, carpooling, and riding public transit. The intent of such modes is to reduce traffic congestion and air pollution, providing benefits to individuals and the community. Benefits of complete streets include the following:

- Improved safety by providing comfortable facilities.
- Balanced transportation systems that provide direct connections, a variety of transportation choices, and reduced traffic congestion.
- Opportunities for healthier, more active lifestyles that include walking and bicycling.
- Establishing blocks as enjoyable places that people want to get to, rather than merely as corridors to pass through.

The UI District's thoroughfares also play a key role in establishing the design theme through the placement and types of buildings, and through the landscape and architectural design of individual parcels and community elements, as described in Chapter 3: Development Code. All of these design elements work together to create superior street scenes that encourage pedestrian activity and a strong identity.

4.1.2. Transitioning from Auto-Oriented Development to a Walkable Urban Campus

Perhaps the most fundamental difference between the vision of a compact, walkable urban campus and conventional auto-oriented development are the policies used to develop and manage parking. For the UI District, parking policy is crucial for three key reasons:

1. Unlike many decisions about the provision of transit, parking policy decisions lie squarely in the hands of the City.
2. Parking policy is perhaps the single most important lever within the City's grasp for affecting the amount of traffic congestion, pollution and greenhouse gas emissions generated by new development.
3. As one Southern California real estate developer put it, "Parking is destiny." Parking dominates architecture, powerfully shaping the form of our buildings and dictating what is financially feasible to build.

Distinguishing between auto-oriented and pedestrian-oriented campus planning

Truly pedestrian-oriented campus planning—development which actually lives up to the promise of delivering high levels of walking, bicycling and transit ridership, and less automobile traffic—can be distinguished from auto-oriented development by a few key parking factors.

- In conventional auto-oriented development, minimum parking requirements are introduced, so that on-street parking need not be managed. In pedestrian-oriented development, actively managing on-street parking, using tools such as parking pricing, parking districts, and residential parking permits, is an essential first step.
- In conventional auto-oriented development, the cost of parking is always hidden in the cost of other goods and services. In pedestrian-oriented development, the cost of parking is revealed, so that people can save money by using less of it.
- In conventional auto-oriented development, parking is ubiquitous and provided free of charge (i.e., its costs hidden), while transit service is expensive and scarce. In the most urban pedestrian-oriented developments, transit service is frequent and (for many users) free. Parking, while readily available, is not given away for free.

The strategies in this Chapter offer a practical and cost-effective path for gradually transitioning from a vacant site bordered by largely auto-dependent development to its envisioned future as a compact, lively and walkable urban campus. Many City and regional initiatives, from large (e.g., the South Bay Rapid bus rapid transit (BRT) line) to smaller (the residential parking permit system adapted recently to protect residential streets from spillover parking near Southwestern College[1]) have set the City on that path already. The approach provided here, illustrated by examples of success from comparable campuses, can help the City advance its broader goals for economic development and environmental sustainability, while offering both cost savings and higher property values to the institutions and companies which will locate within the UI District.

4.1.3. Multi-Modal Planning Principles

The multi-modal transportation system is based upon several key principles. These principles draw heavily on long-established policies used by leading cities and campuses—such as the University of California and California State campuses, private institutions such as Stanford, Cornell and Caltech, and their municipal partners—to create the campuses and the transportation systems, that have allowed their institutions to grow and thrive.[2] UI District's fundamental principles for parking and transportation are:

- Parking facilities and district-wide transportation programs and services shall be planned, sited, established and managed on a district-wide basis as shared campus infrastructure, in order to ensure efficient sharing, minimize vehicle trips and parking demand, and allow excellence in urban design.
    - A Parking and Transportation Department, similar to the Parking and Transportation Departments established at all University of California campuses and many private institutions, shall be established to plan, oversee and manage a comprehensive parking and transportation system for the UI District.

1 For additional information, see: http://www.10news.com/news/chula-vista-creates-parking-district-to-keep-southwestern-college-students-out-of-neighborhood. Accessed January 13, 2017.

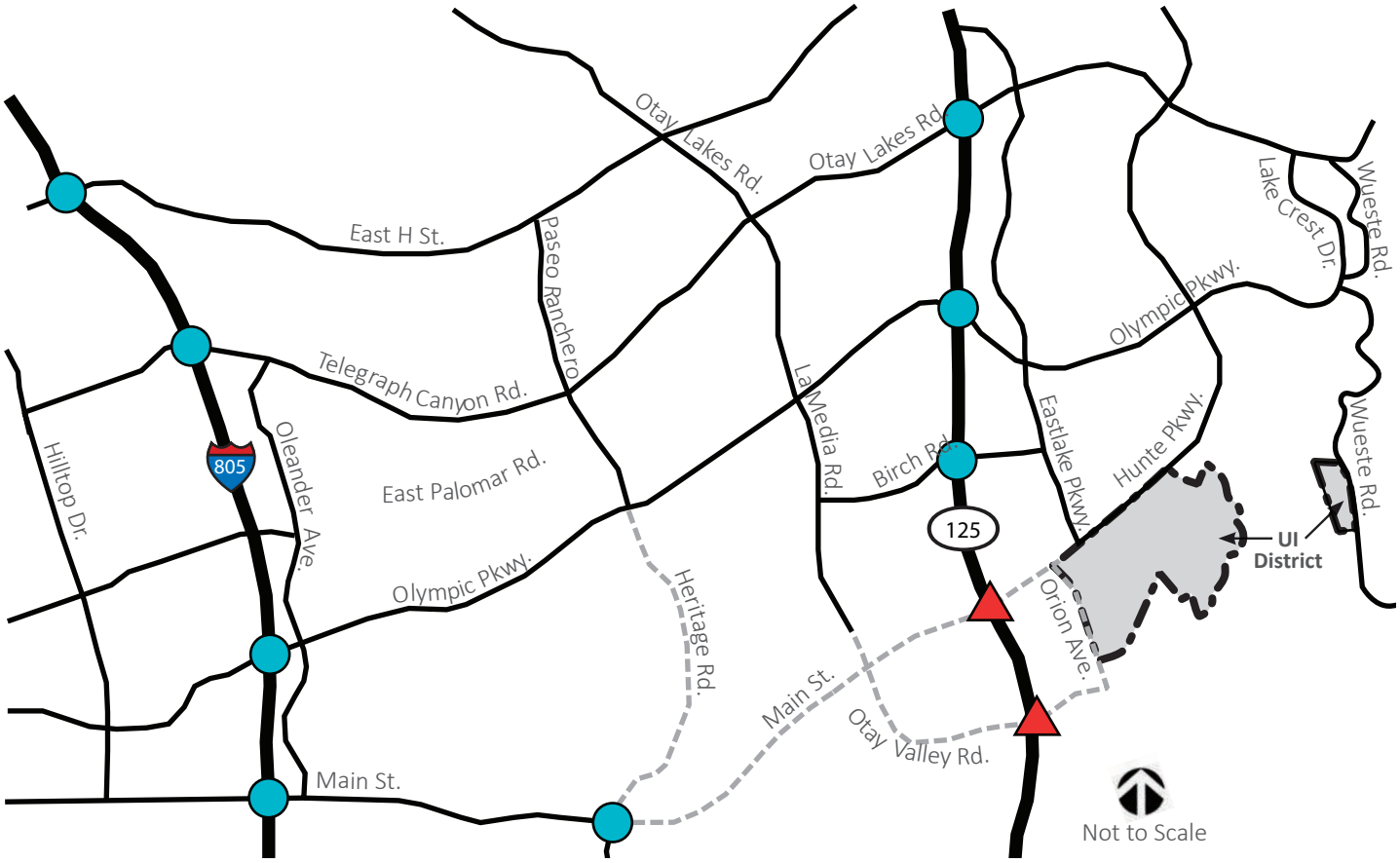
2 In particular, these parking and transportation principles are closely modeled on the University of California's systemwide transportation and parking policies. See: https://www.parking.uci.edu/parking/documents/parking-principles2002.pdf. Accessed January 13, 2017.

- Parking shall be provided as a user fee-based service. The costs of land, capital, operating and maintenance expenses related to the parking system shall be recovered from the users of the parking system. The Parking and Transportation Department may include in the parking system's costs other access costs related to vehicle operation on campus, costs of projects that mitigate the adverse impact of parked vehicles, and costs of programs that may reasonably be expected to reduce the demand for parking on campus.
- There shall be no minimum parking requirements within the UI District. Instead, academic, non-profit and private-sector employers, employees, residents, customers and visitors will meet their parking needs by renting or leasing spaces in the District's shared lots, on a monthly, daily and/or hourly basis. On a case-by-case basis, the Parking and Transportation Department may make exceptions to this general principle: for example, parking intended solely for private residential use at a development might be established by a private partner, and not included in the overall shared parking system.
- Curb adjacent parking in adjacent Villages shall be protected from spillover parking from the UI District by actively managing curb parking, as necessary and appropriate, using tools such as parking pricing, time limits, residential parking permit districts and/or parking benefit districts.

- Thoroughfares shall be designed as Complete Streets that consider all modes of travel including automobiles, bicycles, pedestrians, transit, Low-Speed Vehicles (LSVs), and alternative vehicles.
  - The thoroughfare network shall provide multiple connections and routes to evenly distribute traffic and reduce the need for large volume roadways, create slow speed streets that are safer for all, and shorten distances between destinations.
  - On transit routes, priority should be given to ensuring the speed and reliability of transit vehicles (e.g., via mechanisms such as transit signal priority, queue jump lanes, or dedicated transit lanes).
  - The trail network shall include Village Pathways, Regional Trails, and other multi-use trails that connect to the Chula Vista Greenbelt Master Plan and the OVRP as identified in the GDP.

4.2. Existing Regional Circulation Network

Vehicular access to the UI District is shown Figure 4A: Existing Regional Circulation. Access to the District is currently provided from SR-125 via Olympic Parkway and Birch Road to Eastlake Parkway. Eastlake Parkway currently terminates at its intersection with Hunte Parkway, which is located at the gateway of the UI District. Hunte Parkway is planned to extend westerly through Village 9 as Main Street and a new access ramp will connect Hunte Parkway/Main Street to SR-125, providing direct access to the District. A future access ramp will connect the future Otay Valley Road to SR-125, providing secondary access from the south.



Legend - General Development Planned Uses

- Freeway/Toll Road
- Existing Roadway
- Planned Roadway
- Existing Freeway/Toll Road Interchange
- Planned Freeway/Toll Road Interchange

Figure 4A: Existing Regional Circulation

Existing public transportation is currently provided by Chula Vista Transit, a part of Metropolitan Transit System. Routes 712 and 709 serve the Otay Ranch Area; however, neither route currently extends service to the UI District. The nearest stop is located over one mile away.

4.3. Planned Transit Network

Public transportation is an integral part of the Otay Ranch Community. The design of the UI District promotes access to public transit and locates high intensity land uses close to proposed transit stations. The San Diego Association of Governments (SANDAG) is responsible for regional transportation and transit planning. On October 28, 2011, the SANDAG Board of Directors adopted the 2050 RTP which established the multi-modal transportation system for San Diego County, including the City of Chula Vista. The 2050 RTP includes the South Bay Rapid Project, a $113 million bus rapid transit route which will provide the UI District with frequent and reliable transit service. The 26-mile BRT route will run between the Otay Mesa Port of Entry and Downtown San Diego via eastern Chula Vista. Service is expected to begin in 2018 and will be operated by the San Diego Metropolitan Transit System (MTS). The estimated travel time between Otay Ranch and Downtown San Diego will be approximately 50 to 60 minutes during peak commuting hours.[3]

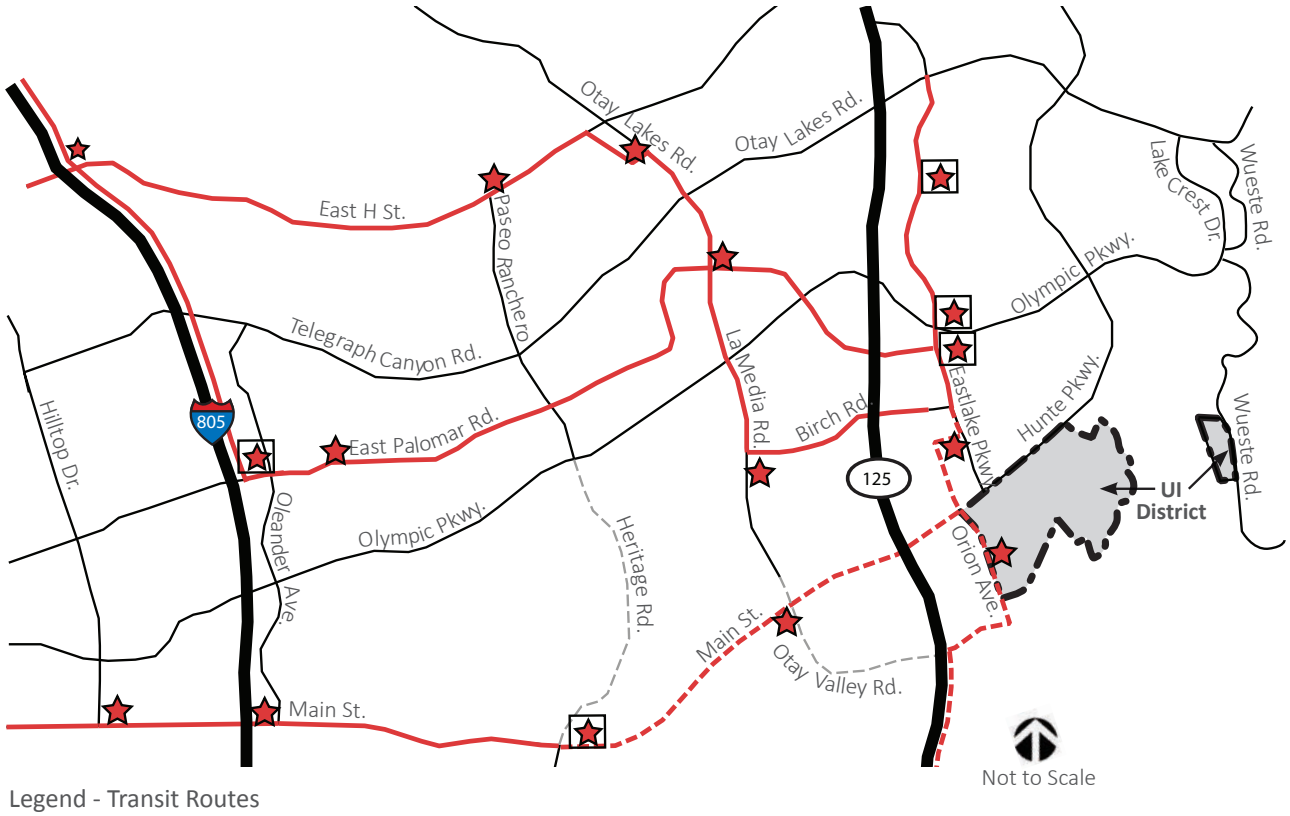
Since streets within the UI District have not yet been built, the initial South Bay BRT route will not pass through the District. The nearest station on the initial route will be the Otay Ranch Town Center station at the intersection of Eastlake Parkway and Kestrel Falls Drive.[4] Eventually, the route will be extended along Orion Avenue between the UI District and Village 9. A South Bay BRT station is planned for the intersection of Campus Boulevard and Eastlake Parkway. Figure 4B: Planned Transit depicts several levels of service that are proposed in local and regional transit plans and the proximity of the UI District to proposed transit stops/stations. Planned transit stops are illustrated on Figure 4B: Planned Transit. The final route, type of service, and timing of service will ultimately be determined by the MTS.

3 For additional information, see: http://www.sandag.org/uploads/publicationid/publicationid_1442_9903.pdf, and http://www.sdforward.com/pdfs/RP_final/Chapter2-AStrategyforSustainability.pdf. Accessed January 13, 2017.

4 For additional information, see: http://www.sandag.org/uploads/projectid/projectid_297_20243.pdf. Accessed January 13, 2017.

Transit stop locations and design are based on the following principles:

- Locate transit stops where there are a number of major pedestrian generators.
- Locate transit stops and pedestrian walkways to provide access while respecting the privacy of residential areas.
- At the intersection of two or more transit routes, locate bus stops to minimize walking distance between transfer stations.
- Locate bus stops on the far side of the intersections to avoid conflicts between transit vehicles and automobile traffic, permitting right-turning vehicles to continue turning movements, or provide a queue jumper phase.
- Transit stops should be provided with adequate walkway lighting and well designated shelters.
- All transit stations, stops and walkways must comply with applicable ADA standards and City Standards.



Legend - Transit Routes

- Freeway/Toll Road
- Existing Roadway
- Proposed Roadway
- Proposed Transit Route Along Existing Roadway
- Proposed Transit Route Along Proposed Roadway or exclusive BRT ROW
- Proposed Stop/Station
- Proposed Stop with Park and Ride

Figure 4B: Planned Transit

4.3.1. BRT

BRT is the highest level of transit service being considered for the Otay Ranch area. BRT is designed to provide longer distance, higher speed, regional trips along high capacity corridors such as arterial roads and freeways. Standard all stop service may be supplemented with express service during peak commute hours to provide direct non-stop service between major residential, employment, and activity centers. BRT combines a series of transit-only lanes with mixed flow lanes that are shared with normal auto traffic. In mixed flow conditions, BRT vehicles typically receive priority at signalized intersections. BRT systems include high-quality, rubber-tired, low floor buses that offer speed, comfort, and amenities with the flexibility of a non-fixed track. Stops are typically spaced 0.5-1 mile apart along arterials and 4-5 miles apart along highways. BRT has a ridership capacity of 50-80 seated plus standees. Right-of-way has been reserved on portions of East Palomar Street, Main Street, Otay Valley Road, and Orion Avenue for planned BRT service.

4.3.2. Rapid Bus

Rapid Bus provides a service level option between BRT and High-Frequency Local Bus service. Rapid Bus also provides higher speed service (averaging 25 mph) along high volume arterial corridors. Rapid Bus combines short segments of transit-only lanes with mixed flow lanes that are shared with normal auto traffic. In mixed flow conditions, rapid bus vehicles typically receive priority at signalized intersections. Rapid Bus can be upgraded to BRT over time as warranted. Rapid Bus includes high-quality, rubber-tired, low floor buses that offer speed, comfort, and amenities with the flexibility of a non-fixed track. Stops are typically spaced 0.5-1 mile apart. Rapid Bus has a ridership capacity of 40 seated plus standees. Planned Rapid Bus service could be accommodated on Hunte Parkway, Otay Valley Road, and Orion Avenue.

4.3.3. High-Frequency Local Bus

High-Frequency Local Bus provides mid-to-short distance trips between key local activity centers and neighborhoods. Buses typically consist of standard and single articulated buses with low floor design. High-Frequency Local Bus integrates with normal auto traffic. Buses travel at speeds up to the posted limit of the streets they operate on; however, due to the frequent stops, the average speed is approximately 12 mph. Stops are spaced approximately a quarter mile apart. Typical passenger capacity is 37-57 seated plus standees.

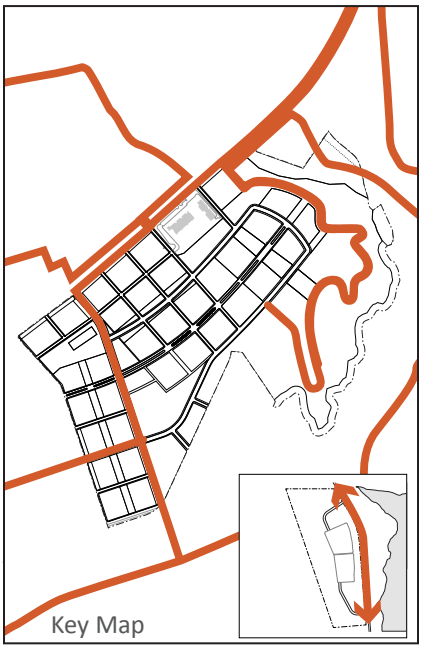
4.4. Existing and Planned Pedestrian & Bicycle Circulation

4.4.1. Chula Vista Greenbelt & OVRP Trails

As described in the Chula Vista Greenbelt Master Plan, planned multi-use trails, will be implemented within the existing Salt Creek sewer access/maintenance road through the Otay Valley on the north side of the river. The Greenbelt Trail is connected to and accessed via connections to the UI District at one point along the District's south edge; see Figure 4C: Off-site Regional Trails. In addition, there are pedestrian connections to the Chula Vista Greenbelt/OVRP trail.

The OVRP Concept Plan identified a multi-use trail system through the Otay River Valley. The portion of the Greenbelt Trail described above coincides with the OVRP trail. By locating these trails together, on an existing maintenance access road, impacts to sensitive habitat in the river valley are minimized and access to the MSCP Preserve is controlled. The Chula Vista Greenbelt Trail will be implemented according to the Greenbelt Master Plan and OVRP Design Standards and Guidelines. Connections and exact trail design will be determined at the time of development application. All trail signage shall conform to the Greenbelt Master Plan.

The Regional Trails occur along the northern boundary of the UI District along Hunte Parkway as shown in Figure 4D: Off-Site Trails Plan. It also extends south through villages 9 and 10 along the south side of Otay Valley Road and eventually connects to the Salt Creek Sewer Interceptor Greenbelt Trail in the OVRP. This trail serves as a multi-use trail for bicycles, pedestrians, and other non-motorized modes of transportation in accordance with the Chula Vista Greenbelt Master Plan. Figure 4C: Regional Trail, Chula Vista Greenbelt Trail, & Village Pathway Section illustrates this trail section for portions of the trail that are not adjacent to Hunte Parkway. All trail signage shall conform with the Greenbelt Master Plan. A second Regional Trail connects Millenia with the UI District through future pedestrian bridges planned over Eastlake Parkway and Hunte Parkway. This Regional Trail then follows the south side of Hunte Parkway to the Salt Creek Trail.



A Village Pathway extends between the pedestrian overcrossing of SR-125 through Village 9 on the south side of Campus Boulevard to the UI District. Village Pathways in Otay Ranch provide an off-street, interconnected multi-use trail that allows bicycles and pedestrians to travel between Village cores and town centers.

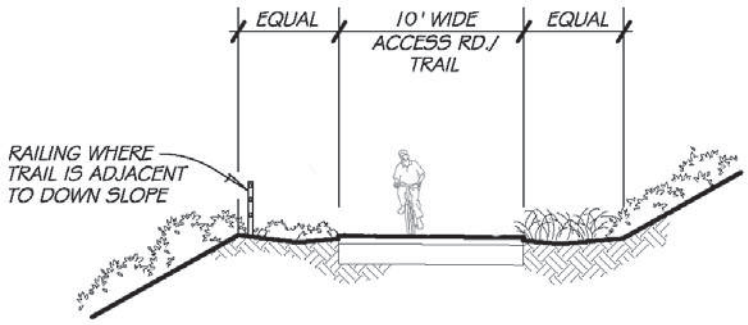


FIGURE 4C: REGIONAL TRAIL, CHULA VISTA GREENBELT TRAIL, & VILLAGE PATHWAY SECTION

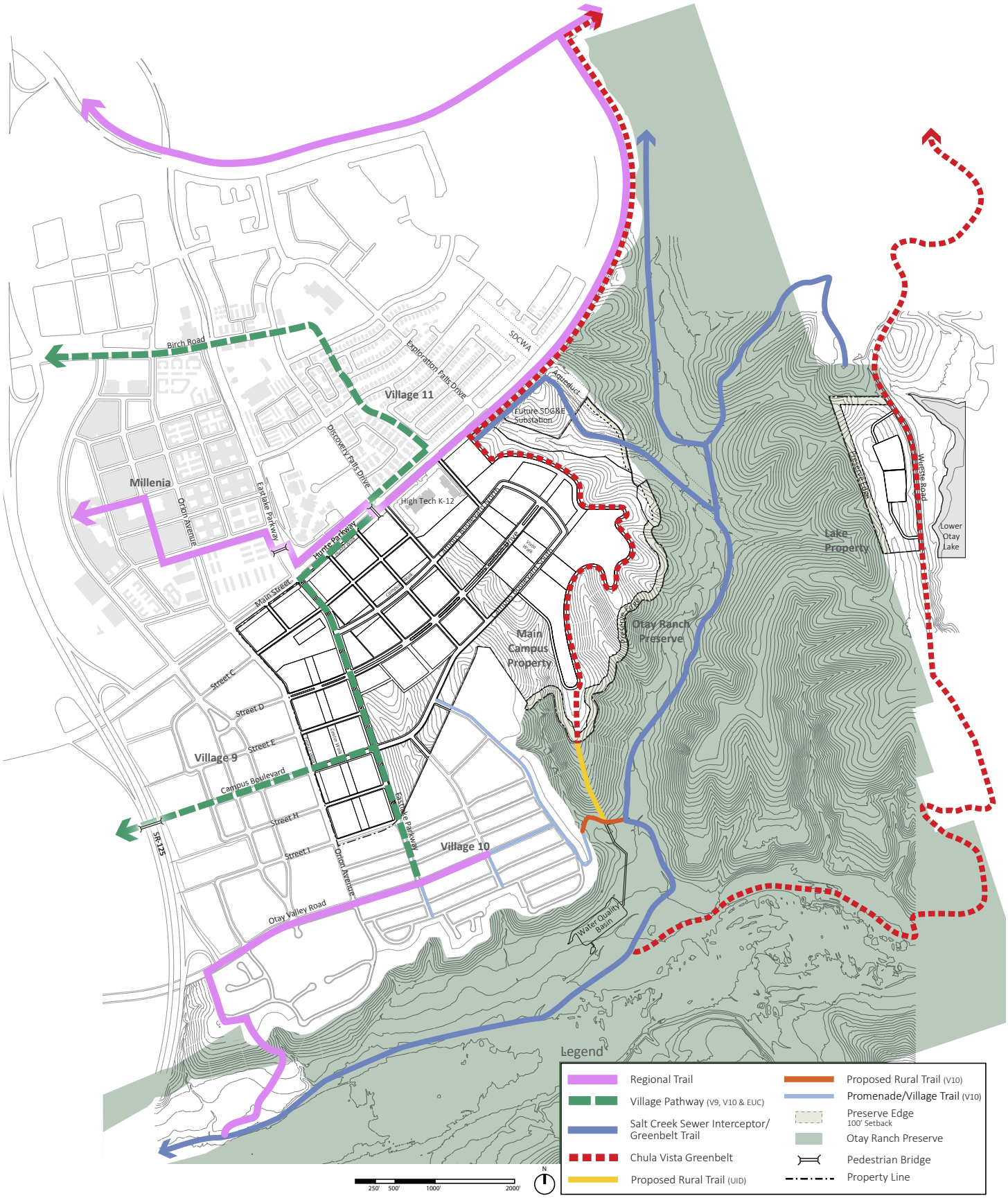


Figure 4D: Off-Site Trails Plan

4.4.2. Planned On-site Pedestrian and Bicycle Circulation Network

The planned pedestrian and bicycle circulation network includes an interconnected system of pathways, trails, bike lanes, paths and routes, and sidewalks as illustrated in Figure 4F: On-Site Pedestrian & Bicycle Circulation Plan. Planned transit stops are also shown since these modes are closely related. The following includes a brief description of each type of pedestrian and bicycle corridor:

Bike Lanes: Most UI District Streets include dedicated bicycle lanes, providing either Class IV bikeways (a.k.a. cycle tracks), or striped, on-street Class II bike lanes, as appropriate.[5]

Local Streets: Although no dedicated lanes are provided for bicycles, the traffic volumes on the local streets will be low enough to accommodate bicycles.

Sidewalks: All streets include sidewalks, providing connections between destination area(s), jobs and housing.

Paseos and Pathways: The alignment of pathways will be determined by the individual site master plan while the alignment of paseos and public pathways will be determined by the UI District Landscape Master Plan, the applicable Master Precise Plan, and site plan(s) for the various planning areas. Typically pathways will be 10 feet wide as shown on Figure 4C: Regional Trail, Chula Vista Greenbelt Trail, & Village Pathway Section. Additional paseos that are not illustrated in Figure 4F: On-Site Pedestrian & Bicycle Circulation Plan, shall be provided for direct pedestrian connections between the various blocks in UI District and to adjacent Villages.

Rural Trail: A Rural Trail connects the UI District to the Salt Creek Sewer Interceptor/Greenbelt Trail. The trail follows an existing path and storm drain facility. For some portions of the trail, topography may require the width to be relatively narrow and grading to be relatively steep. While every effort should be made to provide accessibility, designing portions of this trail to meet handicap accessibility standards is not always feasible. In locations where access standards cannot be achieved, signage shall be posted notifying the public that this trail is not accessible and provide information on alternate accessible route(s). Figure 4E: Rural Trail Section illustrates this trail section.

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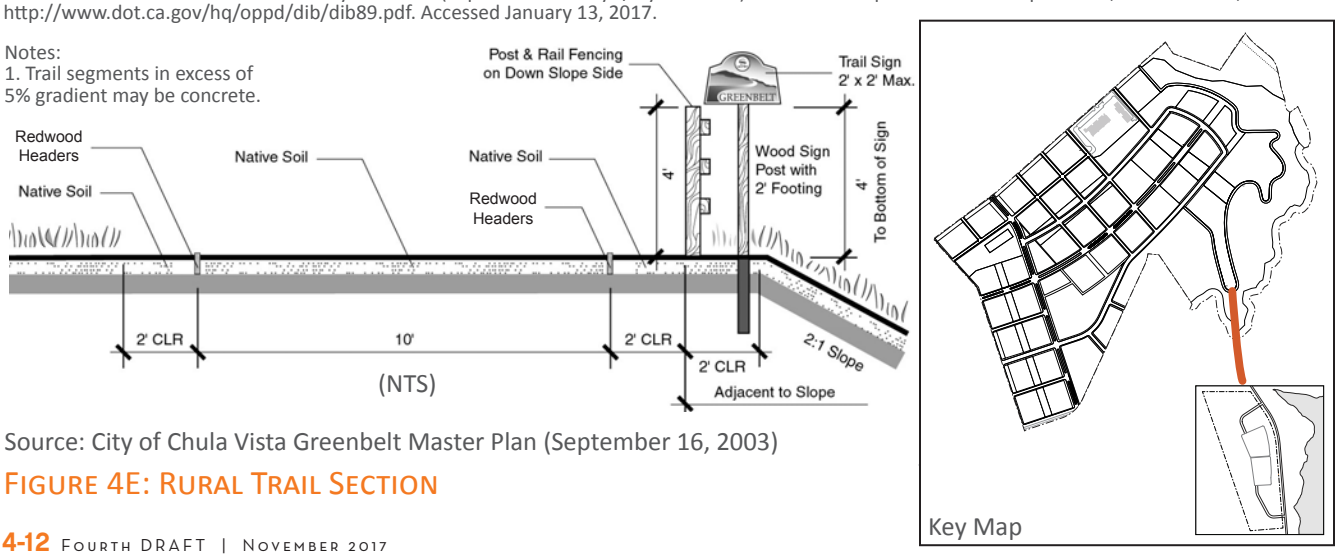
5 Definitions of and standards for Class IV separated bikeways are provided in Caltrans Design Information Bulletin 89. Refer to: "Caltrans Design Information Bulletin 89 Class IV Bikeway Guidance (Separated Bikeways / Cycle Tracks)." California Department of Transportation, December 30, 2015. http://www.dot.ca.gov/hq/oppd/dib/dib89.pdf. Accessed January 13, 2017.



Source: City of Chula Vista Greenbelt Master Plan (September 16, 2003)

FIGURE 4E: RURAL TRAIL SECTION

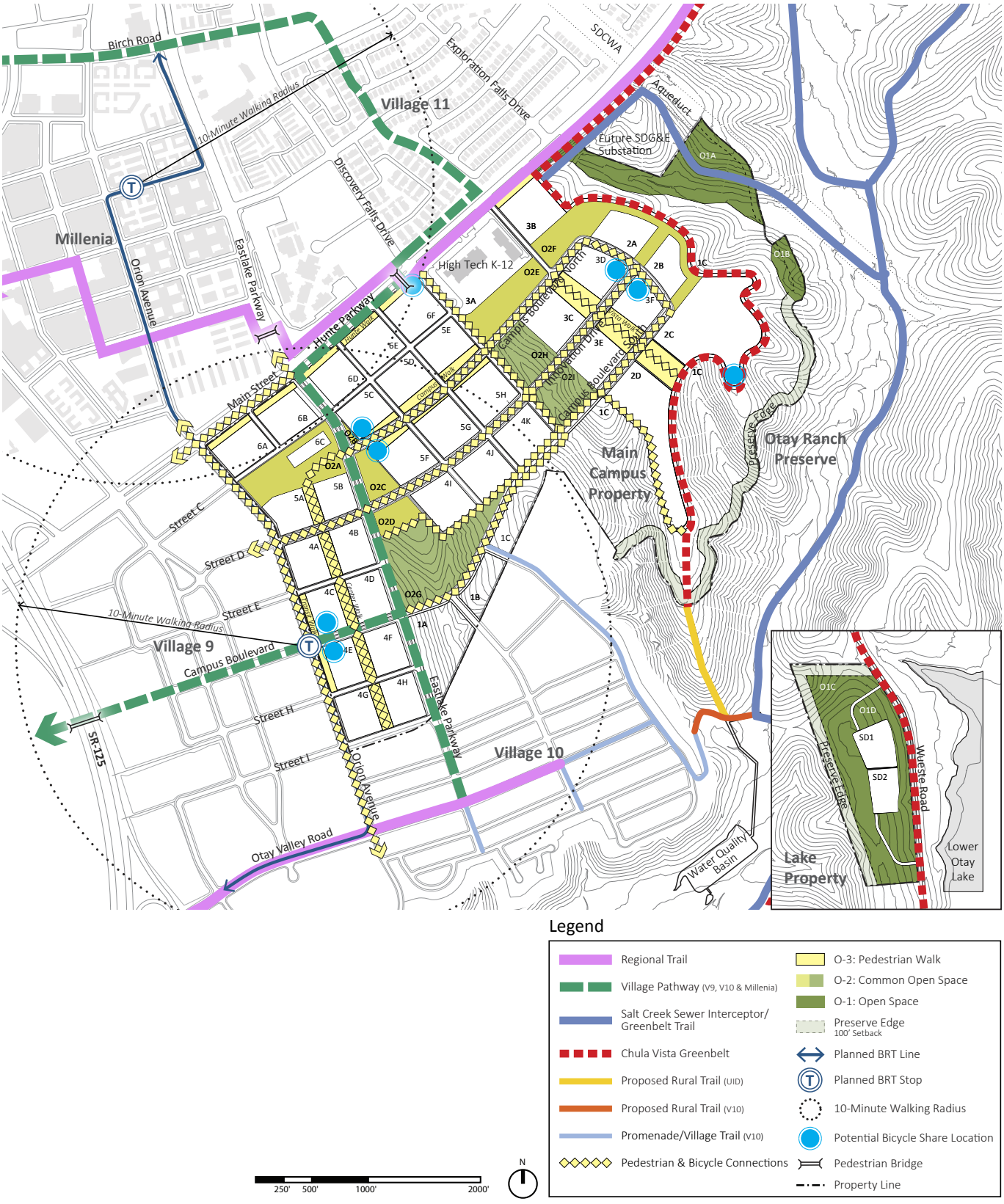
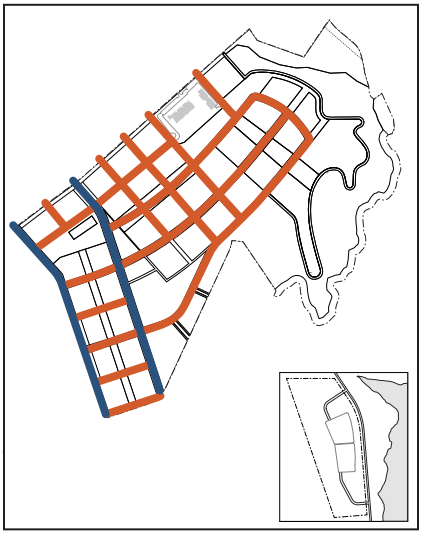


FIGURE 4F: ON-SITE PEDESTRIAN & BICYCLE CIRCULATION PLAN

4.5. Motor Vehicular Circulation

Figure 4G: Motor Vehicle Circulation Plan organizes traffic into a hierarchy of thoroughfares, arranged according to anticipated modes of travel, type of streetscape, and volumes. This organization is consistent with the roadway classifications established by the GDP. The UI District thoroughfares form a grid that promotes walkability and supports urban development. This modified grid gives way to a more irregular street pattern near the eastern edge of the District, providing a transition to the natural open space areas in the south and responding to the topography of this portion of the site.



LSV Circulation Diagram

4.5.1. LSV Circulation Network

LSVs provide a clean alternative vehicular mode of transport, ideal for shorter trips. The LSV network, as illustrated in the LSV Circulation Diagram , consists of low speed streets. The California laws which regulate LSVs (California Vehicle Code sections 21250 – 21266) generally permit LSVs on streets with a posted speed limit of 35 miles per hour or less. All streets within and along the boundaries of the District, with the exception of Hunte Parkway, will be open to LSVs.

4.5.2. Traffic Calming

Traffic calming measures promote the pedestrian-orientation of the District. Curb extensions, for example, extend the line of the curb into the parking lane, reducing the width of the roadway. Curb extensions typically occur at intersections and reduce pedestrian crossing distance and exposure to traffic, improve driver and pedestrian sight distance visibility and visually and physically narrow the roadway, resulting in a traffic calming effect. Traffic calming elements require thoughtful design to provide adequate sight distances and other features to promote safety. The design and location of traffic calming features require the approval of the City Engineer and the Development Services Director prior to or concurrent with approval of the Grading and Improvement Plans.

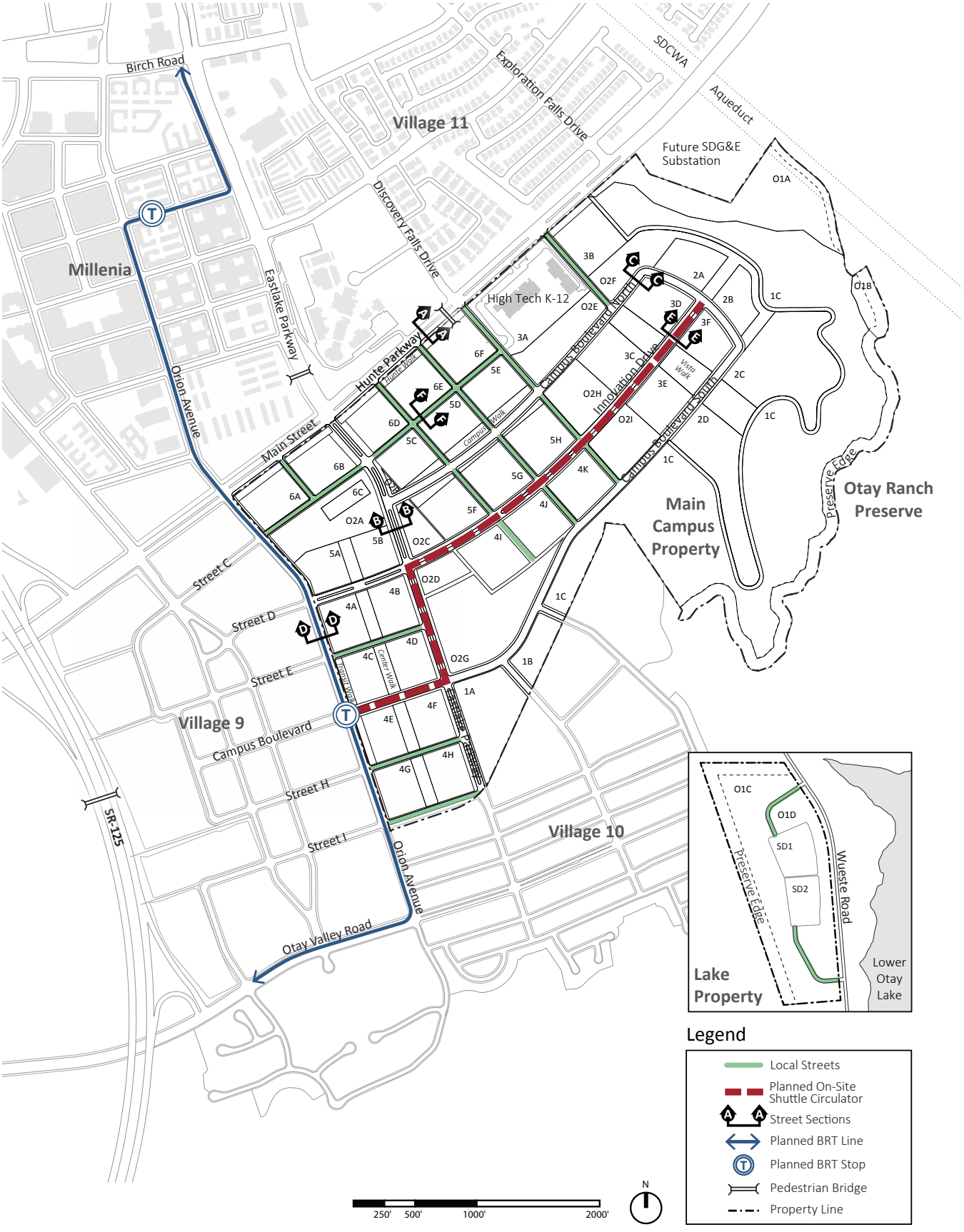


Figure 4G: Motor Vehicle Circulation Plan

A. Slender, Multi-Modal Streets

Slender, multi-modal streets calm traffic by changing the perceptions of the vehicle driver. Slender streets and the presence of numerous people walking, bicycling, and waiting for transit reduce drivers' impulses to speed and increase their likelihood of yielding to crossing pedestrians. Streets with a single travel lane in each direction create an environment where the most prudent driver sets the pace. These factors create a safer environment for people using all modes of transportation, including people in automobiles.

B. Multiple Connections

The grid circulation pattern of the UI District creates multiple connections to more evenly distribute traffic, resulting in smaller, calmer streets. Multiple connections provide alternate route options, thereby distributing traffic throughout the network rather than funneling all traffic onto one single roadway. Numerous intersections also require vehicles to travel more slowly and make frequent stops, thereby calming traffic further.

C. On-Street Parking

On-street parking contributes to traffic calming by slowing traffic down as drivers search for available spaces and enter or leave on-street parking spaces. On-street parking also contributes to pedestrian safety and comfort by creating a buffer between moving traffic and pedestrians, reducing the level of perceived noise on the sidewalk, and reducing the need for off-street parking. On-street parking also promotes successful retail businesses by providing convenient and efficient access to parking.

4.5.3. Potential Parking Locations & Phasing

The UI District Parking and Transportation Department established in § 4.1.3. Multi-Modal Planning Principles (see more discussion in § 4.8. Parking and TDM) will be charged with planning, siting, developing and managing the District's parking infrastructure. Parking may potentially be located by the Parking and Transportation Department anywhere within the District. The Parking and Transportation Department will need to work closely with the District's overall planners to ensure that this is done in a judicious and coordinated manner, which respects the overall vision of the Plan, and regulations such as those covering habitat preservation, water quality, and so forth.

In order to minimize motor vehicle traffic within the District, and to encourage a "Park Once" pattern of behavior, the bulk of these shared parking facilities should be located at the perimeter of the District, so that they naturally intercept motorists coming into the District from Hunte Parkway/Main Street, Eastlake Parkway and Otay Valley Road. Figure 4H: Access and Parking Plan illustrates potential locations for shared public parking facilities. Most of these potential parking facility sites are located within 1.5 blocks of Hunte Parkway, in order to provide good access to SR 125 and points north and east, and to serve the blocks that are eventually intended to host the highest intensity buildings.

Parking Phasing

In the District's early years—or perhaps even for decades—the district parking needs will likely be able to be accommodated with surface lots on available surface land, which would minimize development costs and maximize the financial feasibility of early phase development. In later years, when open land available for building development has been exhausted, serious investment in both structured parking (which frequently has a capital cost 10 times that of surface parking) and Transportation Demand Management (TDM) programs to reduce parking demand, will then become necessary.

Creating a specific phasing plan as part of this plan would be premature, given the level of uncertainty about the identity of the campus' first occupants and their needs. Instead, the District's Parking and Transportation Department should be charged with creating, regularly updating and implementing a phasing plan, in conjunction with District's overall campus planners, as the District evolves.

Several logical phasing approaches are possible. As one example, the potential parking locations along Hunte Parkway, shown on Figure 4I: Hunte Parkway/Main Street Section A-A, could initially be developed as surface lots, with the first building projects located primarily on blocks further into the site (e.g., blocks 5B, 5C, 5D, 5F, etc.). In later decades, as the District builds out, those surface lots could then eventually be replaced by the envisioned midrise buildings (42 to 92 feet tall) with subterranean or structured parking contained within them. Since this is typically a more expensive building type than low-rise construction, and since providing

structured or subterranean parking within a building is a significantly more costly method of providing parking, postponing these buildings until a later phase can substantially reduce costs. Additionally, waiting to construct expensive structured or subterranean parking until later phases would allow campus parking and transportation staff to more precisely estimate the likely level of parking demand for future phases. Once the actual institutions moving to the district are known, their specific building plans and expected future populations assessed, and their populations' travel patterns assessed, future parking demand and the need for TDM programs can be much more clearly judged.

This evolution—from inexpensive surface parking on available land, to substantial investments in transportation programs that cost-effectively reduce parking demand, to expensive structured parking when land available for development become scarce—is the typical pattern of development on many campuses and in many mixed-use districts. At campuses with available surface land, expensive structured parking can often be put off for many years or even decades. Stanford University, for example, did not build its first parking structure until 1987, more than a century after the University's founding.

4.5.4. Thoroughfare Standards

The following sections provide a detailed description of each proposed thoroughfare and its components. Each section addresses the dimensions and modes of travel. Any additional streets, such as smaller streets that provide internal circulation to planning areas shall be designed and reviewed as part of the Site Plan and/or Tentative Map for individual planning areas and shall be subject to City approval.

All street sections shown herein are conceptual only. Final design shall be determined by the Tentative Map but may be modified without a SPA Amendment at final map.

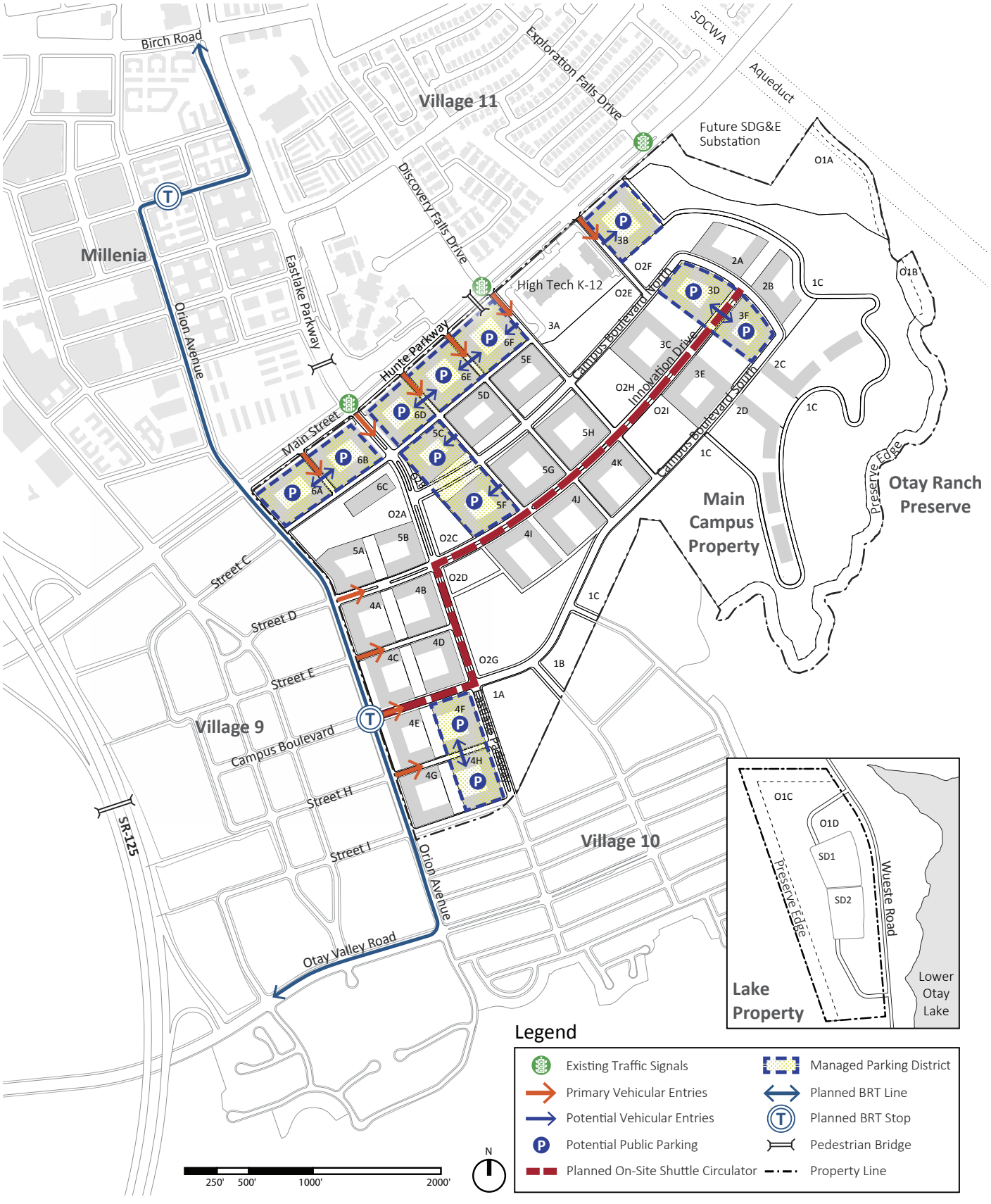
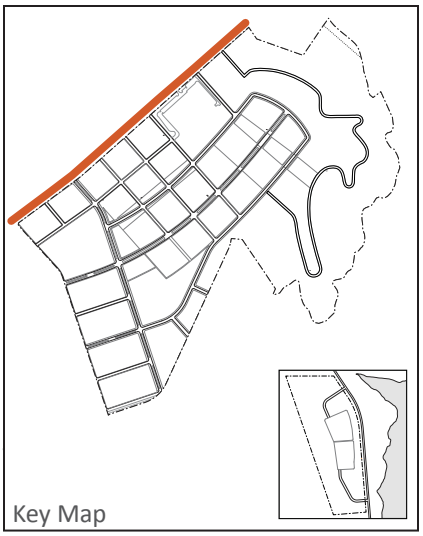


Figure 4H: Access and Parking Plan


Key Map

4.5.5. Hunte Parkway/Main Street

Hunte Parkway turns into Main Street west of Eastlake Parkway and eventually connects to the SR-125. This street provides access to the UI District, Millenia, Villages 9 and 10, and existing villages to the east. Hunte Parkway is an existing street. As described in Chapter 3 (see § 3.4.2. T-6: District Gateway), Hunte Parkway/Main Street will, at full buildout, be bordered by the UI District's tallest buildings. The design intent is to establish a strong urban edge for the UI District, announcing this is a unique place for people to work, learn and live. On the UI District side of the street, just to the south of the street right-of-way, Hunte Walk (O-3 Sector), providing a 20-foot deep Open Space Walk, will be established adjacent to the Hunte Parkway/Main Street right-of-way, and will extend along most of the District land bordering Hunte Parkway/Main Street. Active ground-floor uses will be sited along the Hunte Walk.

Hunte Parkway itself will be restriped, within the existing curbs, to provide buffered bicycle lanes, giving cyclists a more comfortable experience. Existing curb parking adjacent to the UI District will be relocated to off-street facilities within the District. Formal shade trees along the Hunte Walk and the Parkway itself will provide shade, while planting and other streetscape features will help to create a formal arrival statement, distinguishing these blocks of Hunte Parkway from the remainder of its length. Figure 4I: Hunte Parkway/Main Street Section A-A illustrates this section. Note that the Hunte Walk, which will be adjacent to but outside the street right-of-way, is not illustrated here (See 3.4.2. T-6: District Gateway for illustrations and further description of the Hunte Walk).

In future planning and design stages, consideration should be given to changing the UI District-adjacent portion of Hunte Parkway/Main Street to two travel lanes in each direction, in order to allow for a more bicycle and pedestrian-friendly street, improved streetscape, and a more easily crossable roadway. This would make the street less a barrier and separator, and more of a place that integrates the District with the yet-to-be-developed neighboring parcels in Millenia and the future school site. Testing the feasibility of this option will require further study once District land uses and traffic patterns have been further determined.

A. Classification:

- Six Lane Major.

B. General Dimensions:

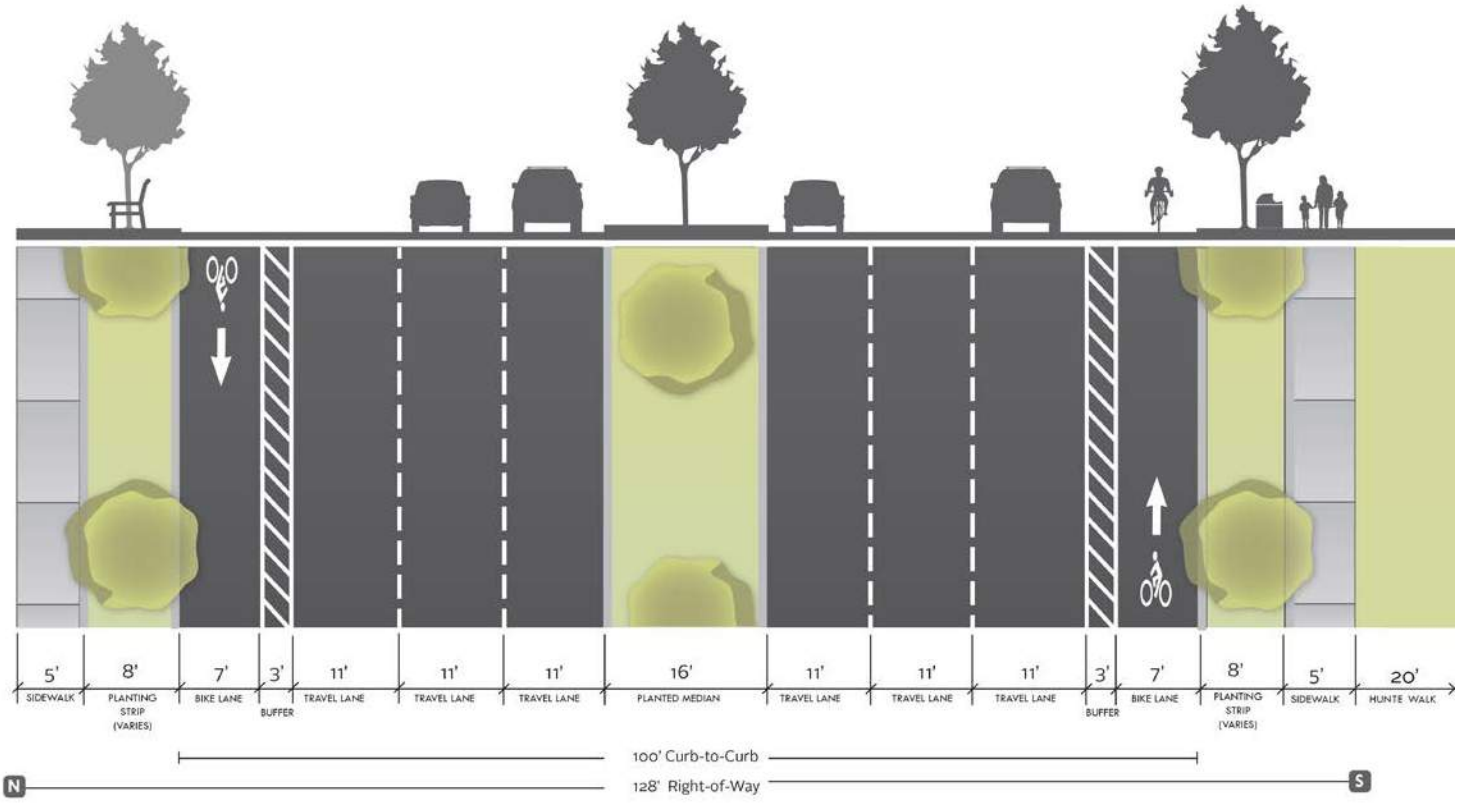
- Right-of-Way: 128 feet.
- Curb-to-Curb: 100 feet.
- Median: 16 - 24 feet.
- Planting Strip: 8 feet (varies) (both sides).

C. Modes:

- Vehicles: 6 travel lanes (3 in each direction).
- Parking: Emergency parking only.
- Bike: Class IV 7-foot wide bikeways with 3-foot wide buffers (1 in each direction).
- Pedestrian: 10-foot sidewalk (both sides).
- Transit: None proposed.
- LSVs: Not permitted.

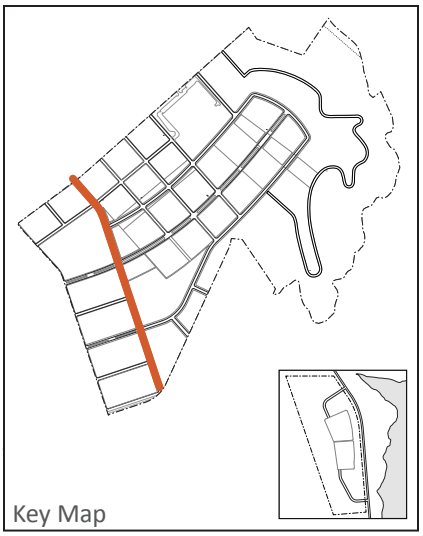
D. Landscaping:

- Street Tree Specifications:
    - Height: 20'-40'
    - Width: 15'-30'
    - Spacing: 40'o.c.
    - Deciduous
- For an approved list of street trees, see the City of Chula Vista Urban Forest Tree List: http://www.chulavistaca.gov/home/showdocument?id=14654



Maintains existing curbs and median width, adds buffered bike lanes.

Figure 4I: Hunte Parkway/Main Street Section A-A


Key Map

4.5.6. Eastlake Parkway

Eastlake Parkway provides a major gateway into the UI District. North of the District Eastlake Parkway provides access to Otay Ranch Town Center, Millenia and a secondary connection to the SR-125 via Olympic Parkway. To the south, the roadway will connect with Otay Valley Road in Village 10 and provide another future connection to the SR-125, before terminating near the boundary of the Otay Ranch Preserve.

North of Hunte Parkway, outside of the District, Eastlake Parkway functions as a major arterial. Moving south from Hunte Parkway, the roadway's character will transition. In the first block south of Hunte Parkway, most automobile traffic destined for the District will turn off into the parking facilities in the blocks adjacent to Hunte (e.g., blocks 6B and 6D), allowing the number of travel lanes to drop to two lanes. The remainder of the street within the District will remain at two through lanes, until the street's southern terminus near Otay Ranch Preserve. This transition will let the portion of Eastlake Parkway within the District become a welcoming and beautifully landscaped gateway to the campus. At two lanes, this portion of the Parkway will also be slower moving and easily crossable by people on foot, allowing it to serve as a place that integrates the campus and the adjacent village, rather than a high-speed barrier that divides the two. Figure 4J: Eastlake Parkway Section B-B illustrates this section.

A. Classification:

- Village Entry Street.

B. General Dimensions:

- Right-of-Way: 120 feet.
- Curb-to-Curb: 60 feet.
- Median: 20 feet.
- Planting Strip: 12 feet (both sides).

C. Modes:

- Vehicles: 2 travel lanes (1 in each direction).
- Parking: No parking.
- Bike: Class IV 6-foot wide bikeways with 3-foot wide buffers (1 in each direction).
- Pedestrian:10-foot sidewalk (both sides).
- Transit: None.
- LSVs: Permitted.

D. Landscaping:

- Street Tree Specifications:
  - Height: 25'-35'
  - Width: 25'-35'
  - Spacing: 40'o.c.
  - Deciduous
- For an approved list of street trees, see the City of Chula Vista Urban Forest Tree List: http://www.chulavistaca.gov/home/showdocument?id=14654

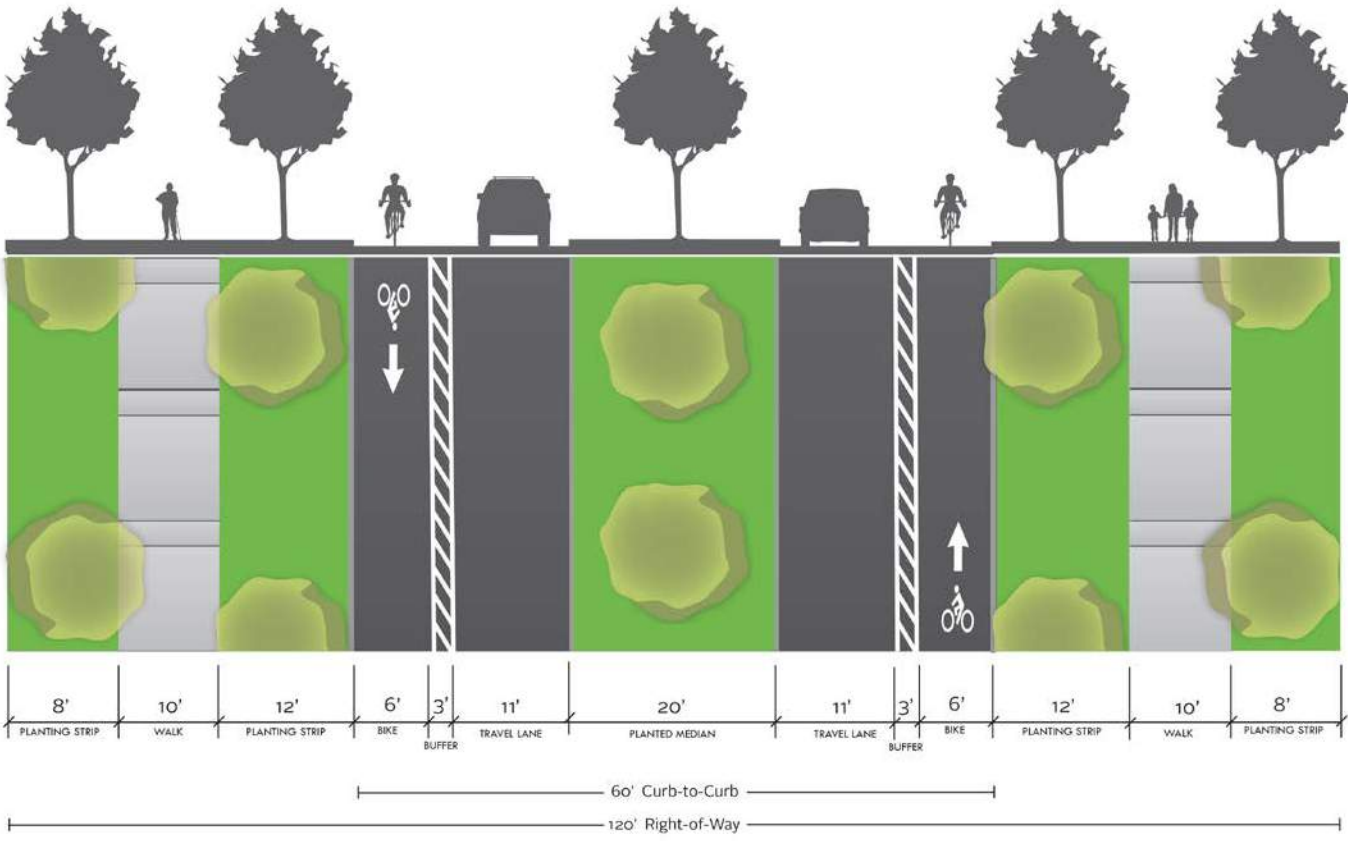
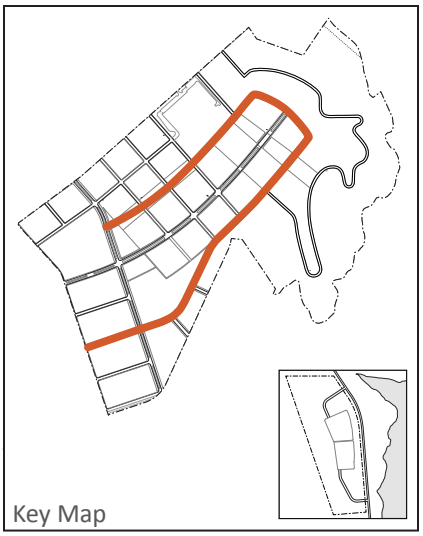


Figure 4J: Eastlake Parkway Section B-B


Key Map

4.5.7. Campus Boulevard North & Campus Boulevard South

Campus Boulevard is a multifunctional street that makes an east-west loop through the District. To the north of Innovation Drive, the street is designated Campus Boulevard North, and to the south, the street is designated Campus Boulevard South. Figure 4K: Campus Boulevard Section C-C illustrates this section.

A. Classification:

- Town Center Street.

B. General Dimensions:

- Right-of-Way: 94 feet.
- Curb-to-Curb: 58 feet.
- Median: No median.
- Planting Strip: 8 feet (both sides).

C. Modes:

- Vehicles: 2 travel lanes (1 in each direction).
- Parking: Parallel parking (both sides).
- Bike: Class IV 7-foot wide bikeways with 3-foot wide buffers (1 in each direction).
- Pedestrian: 10-foot sidewalk (both sides).
- Transit: None.
- LSVs: Permitted.

D. Landscaping:

- Street Tree Specifications:
    - Height: 25’
    - Width: 25’
    - Spacing: 30’o.c. - 40’o.c.
    - Deciduous
- For an approved list of street trees, see the City of Chula Vista Urban Forest Tree List: http://www.chulavistaca.gov/home/showdocument?id=14654

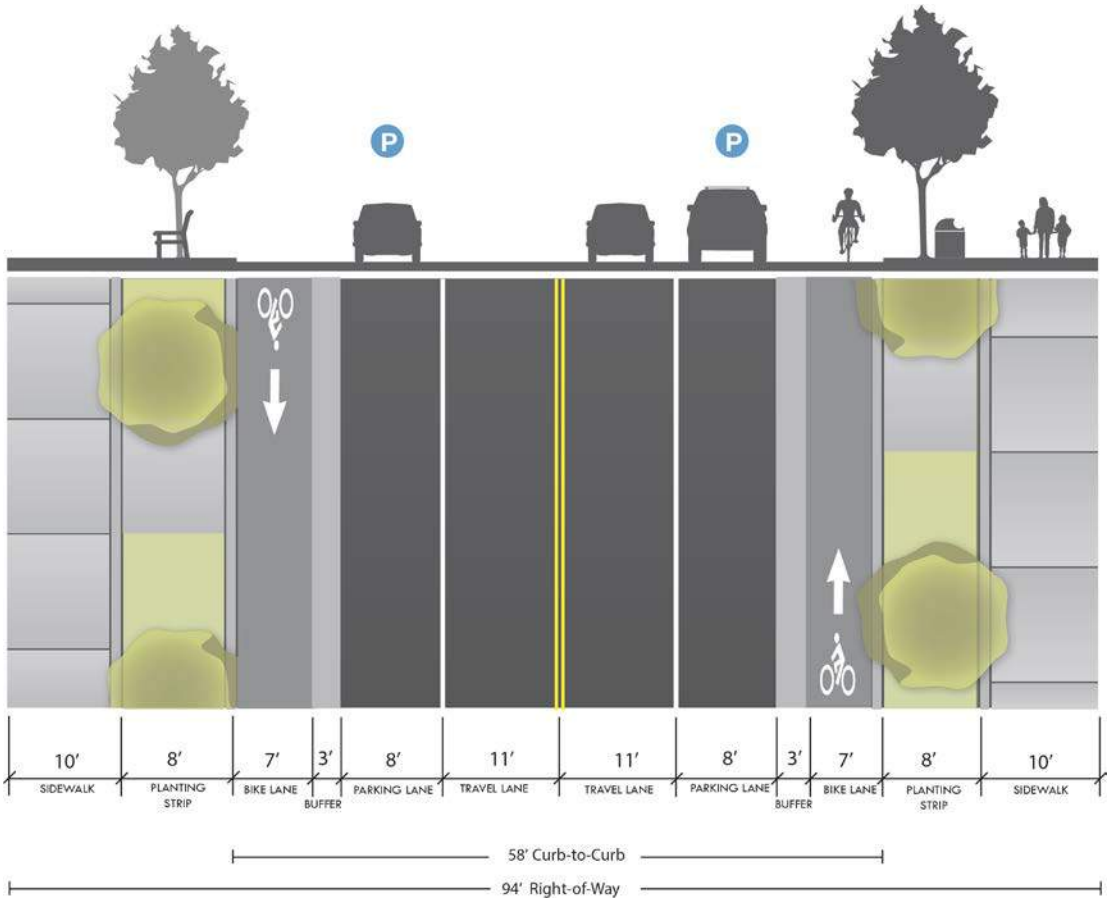
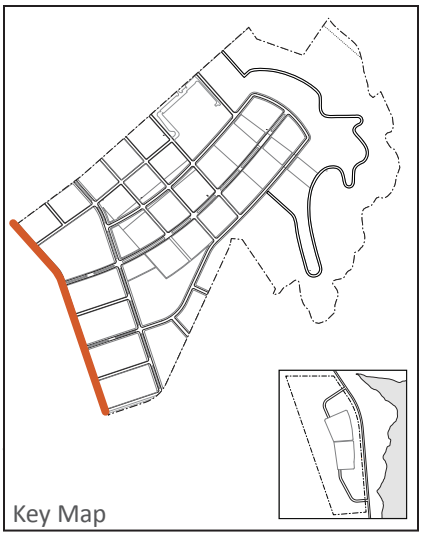


Figure 4K: Campus Boulevard Section C-C



4.5.8. Orion Avenue

Orion Avenue extends from the northerly boundary of the District to Otay Valley Road and separates the UI District from Village 9. This roadway will also provide transit to serve UI District, and Villages 9 and 10. Figure 4L: Orion Avenue Section D-D illustrates this street section.

A. Classification:

- Town Center Street.

B. General Dimensions:

- Right-of-Way: 108 feet.
- Curb-to-Curb: 78 feet.
- Median: No Median.
- Planting Strip: 6 feet (both sides).

C. Modes:

- Vehicles: 2 travel lanes (1 in each direction).
- Parking: No parking.
- Bike: Class IV 6-foot wide bikeways with 3-foot wide buffers (1 in each direction).
- Pedestrian: 9-foot sidewalk (both sides).
- Transit: 2 11-foot wide transit lanes (1 in each direction).
- LSVs: Permitted.

D. Landscaping:

- Street Tree Specifications:
    - Height: 20'-30'
    - Width: 20'-25'
    - Spacing: 30'o.c. - 40'o.c.
    - Evergreen
- For an approved list of street trees, see the City of Chula Vista Urban Forest Tree List: http://www.chulavistaca.gov/home/showdocument?id=14654

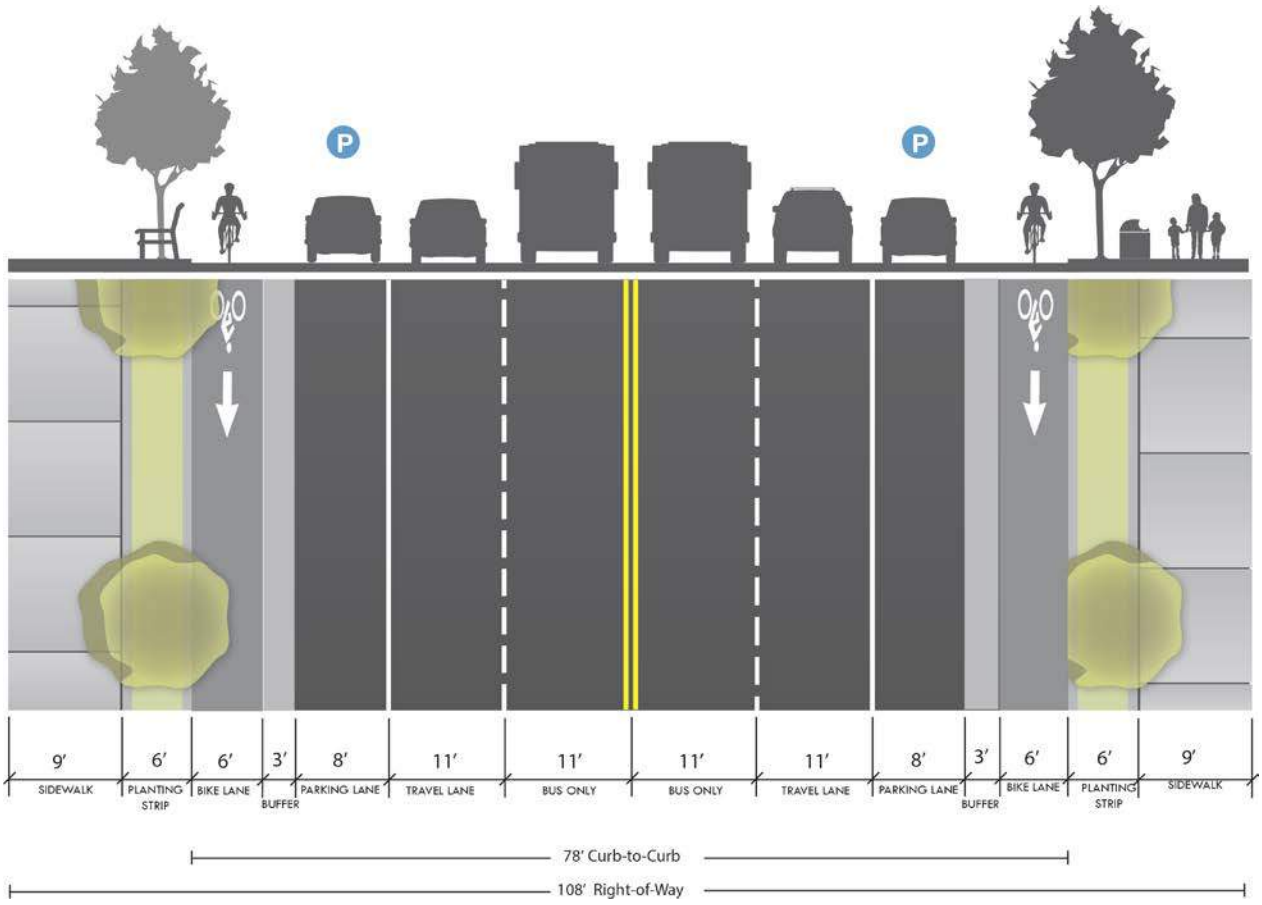
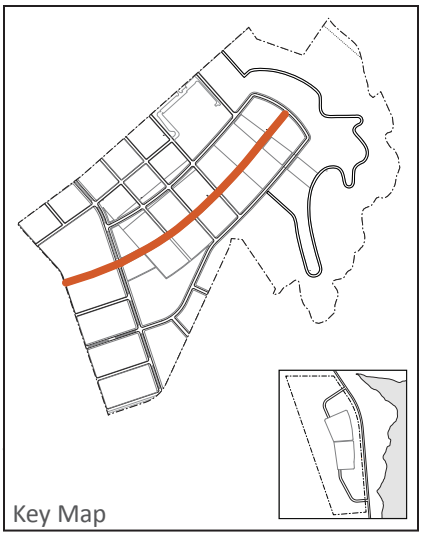


Figure 4L: Orion Avenue Section D-D


Key Map

4.5.9. Innovation Drive

Innovation Drive forms an east-west spine for the District, and will function as both a corridor for movement and a central meeting place where faculty, students, employees and visitors meet and mingle. At buildout of the District, a campus shuttle will traverse Innovation Drive from its eastern terminus to Orion Avenue, and will then turn south on Eastlake Parkway to reach the planned future South Bay BRT station at Eastlake Parkway and Campus Boulevard South. At buildout, the portion of the street to the east of Eastlake Parkway will be a transit, bicycle and pedestrian mall: these blocks will be open to campus shuttles, emergency response vehicles, university service vehicles, LSVs, cyclists and pedestrians, but closed to private motor vehicles. (Serra Mall at Stanford University provides a California precedent for this type of transit/service vehicle/bicycle street.) This portion of the street will provide safe, comfortable and uncongested access for people riding transit, bicycling, or driving essential service vehicles, while freeing the central campus from the noise and congestion that can be caused by too many private vehicles. (In earlier phases of campus development, when the shuttle may not be in service yet, and congestion less of an issue, this street will likely remain open to private motor vehicles). The portion of Innovation Drive to the West of Eastlake Parkway will remain open to all traffic. Figure 4M: Innovation Drive Section E-E illustrates this section.

A. GDP Classification:

- Town Center Street.

B. General Dimensions:

- Right-of-Way: 110 feet.
- Curb-to-Curb: 82 feet.
- Median: 24 feet.
- Planting Strip: None but may have tree grates or cutouts for trees and as needed to meet water quality standards.

C. Modes:

- Vehicles: 2 travel lanes (1 in each direction).
- Parking: Parallel parking (both sides).
- Bike: Class IV 7-foot wide bikeways with 3-foot wide buffers (1 in each direction).
- Pedestrian: 14-foot wide sidewalk (both sides).
- Transit: High-Frequency Local Bus (Campus Shuttle).
- LSVs: Permitted.

D. Landscaping:

- Street Tree Specifications:
    - Height: 30'-50'
    - Width: 15'-30'
    - Spacing: 40'o.c.
    - Evergreen or Deciduous
- For an approved list of street trees, see the City of Chula Vista Urban Forest Tree List: http://www.chulavistaca.gov/home/showdocument?id=14654

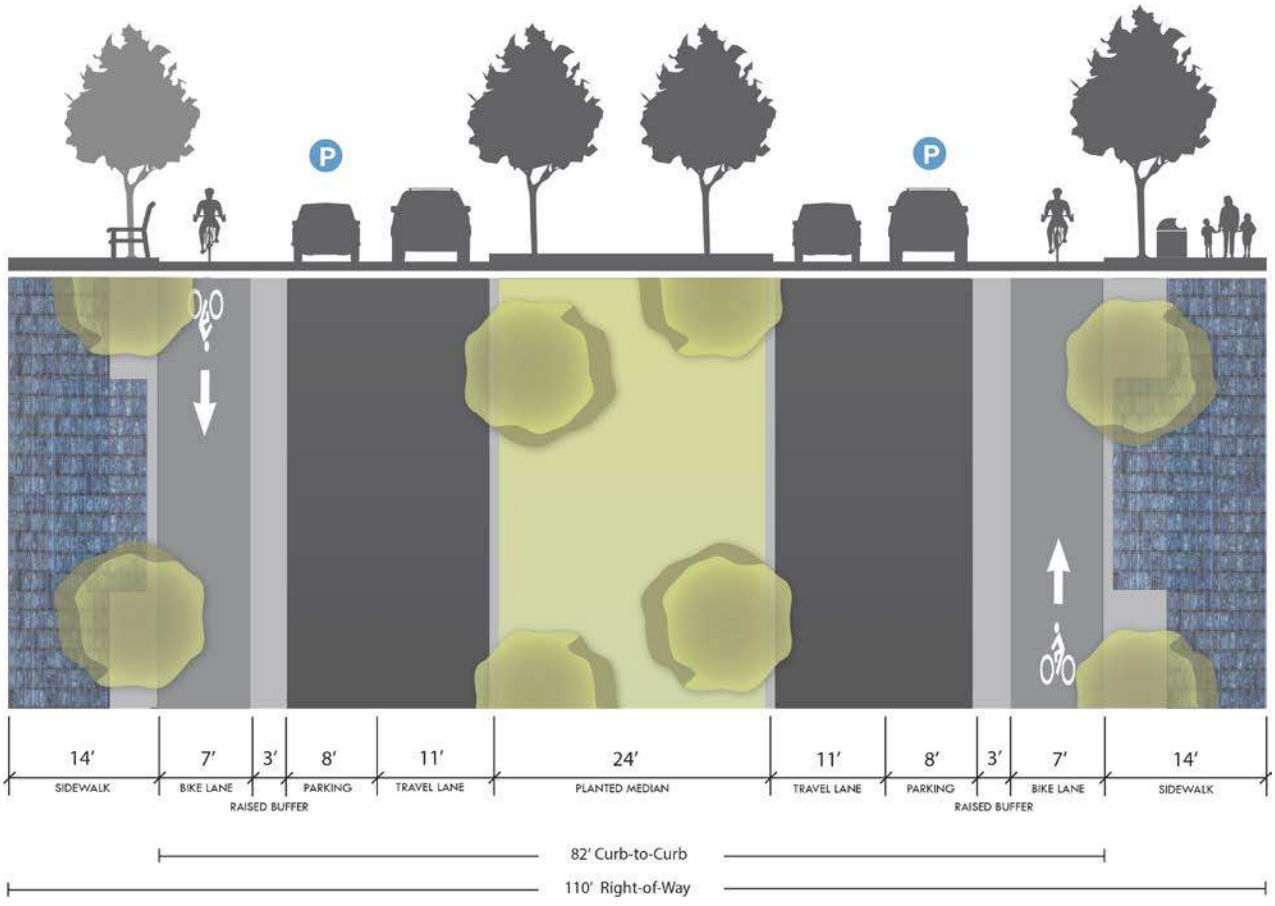
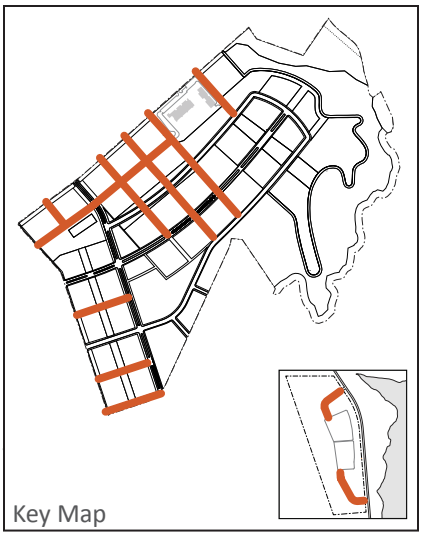


Figure 4M: Innovation Drive Section E-E


Key Map

4.5.10. Local Streets

Local streets are public streets that occur in many locations within the District. The exact alignment of these streets will be determined by the Tentative Map(s) for this area. Local street patterns shall be designed to maximize connectivity within the District and promote walkability. Cul-de-sacs, if any, shall be designed to provide pedestrian connections between dead-end streets and adjacent planning areas, parks or open space trails as appropriate to site conditions. Figure 4L: Orion Avenue Section D-D illustrates this section. Private local streets shall be required as part of individual projects.

A. Classification:

- Local Street.

B. General Dimensions:

- Right-of-Way: 56 feet.
- Curb-to-Curb: 36 feet.
- Median: No Median.
- Planting Strip: 5 feet (both sides).

C. Modes:

- Vehicles: 2 travel lanes (1 in each direction).
- Parking: Parallel parking (both sides).
- Bike: Shared with vehicles.
- Pedestrian: Sidewalk (both sides).
- Transit: None.
- LSVs: Permitted.

D. Landscaping:

- Street Tree Specifications:
    - Height: 25’
    - Width: 25’
    - Spacing: 20’o.c. - 40’o.c.
    - Evergreen or Deciduous
- For an approved list of street trees, see the City of Chula Vista Urban Forest Tree List: http://www.chulavistaca.gov/home/showdocument?id=14654

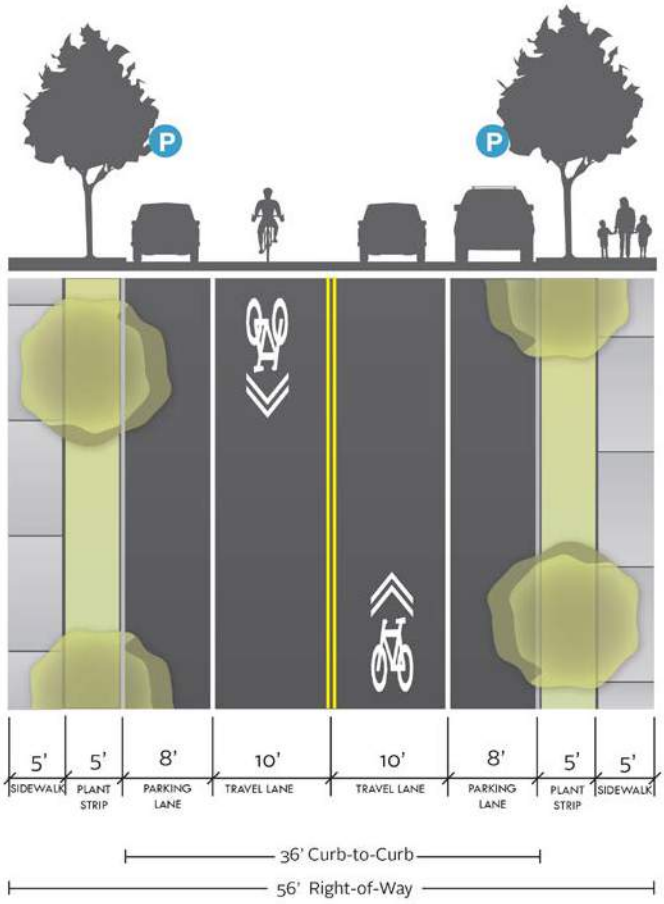


Figure 4N: Local Streets Section F-F

4.5.11. Alleys

Alleys occur in the neighborhoods of any transect to provide access to rear-loaded garages and parking. The exact location and alignment of these streets will be determined by the Tentative Map(s) for individual Planning Areas. Figure 4O: Alleys illustrates this section.

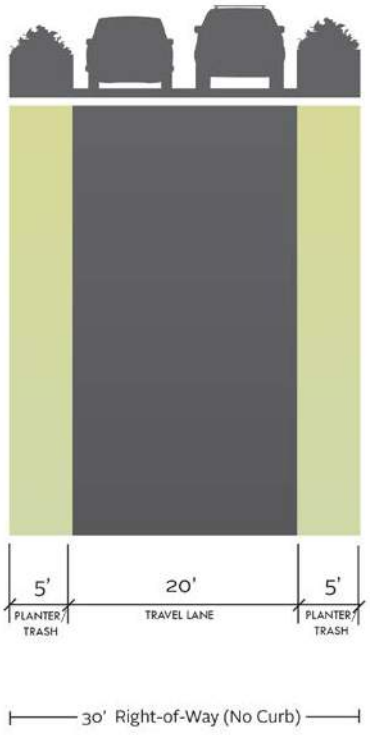


FIGURE 4O: ALLEYS

A. GDP Classification:

- Alley Street.

B. General Dimensions:

- Right-of-Way: 30 feet.
- Curb-to-Curb: 20 feet.
- Median: None.
- Planting Strip: 5 feet (both sides).

C. Modes:

- Vehicles: 2 travel lanes (1 in each direction).
- Parking: Parallel and perpendicular parking may be provided outside the right-of-way where appropriate.
- Bike: None.
- Pedestrian: None.
- Transit: None.
- LSVs: Permitted.

4.6. Roadway Phasing

The Public Facilities Financing Plan (PFFP in Appendix A) establishes the circulation phasing and identifies the timing of specific improvements necessary to maintain the levels of services to the City's threshold standards in the Growth Management Element of the Chula Vista General Plan. The PFFP also describes the obligations for the construction, or contributions toward construction, for specific street segments.

The phasing of the circulation plan, including specific access points and internal circulation, bicycle, pedestrian, and road crossings will be determined by the PFFP. Variations to these concepts may occur where safety or efficiency can be enhanced.

4.7. Roadway Maintenance

Other necessary street maintenance, including litter removal, weed/trash abatement, and the repair of streets, sidewalks, curbs and gutters, shall be provided by the City of Chula Vista and/or other maintenance entities as determined by the City through its Street Maintenance Program.

4.8. Parking and TDM

4.8.1. Key Principles for Parking and TDM

This section restates and expands upon the key parking and TDM principles established earlier, and illustrates the successful use of these principles in comparable campus and innovation districts. The approach will accommodate the practical short-term needs of a broad range of potential private-sector, non-profit and/or governmental institutions, while still advancing the City's commitment to its larger economic development and environmental responsibility goals.

Many public and private university campuses throughout the United States, including the University of California and California State campuses, follow these principles. One successful nearby example is the University of California, San Diego, where both parking and many transportation services are provided by the University's Transportation Services Department. Many municipalities throughout the United States also follow these principles and use them to provide shared parking facilities and transportation services for their community's downtowns and mixed-use neighborhoods. Chula Vista's own Downtown Parking District is one example. Some of the best-known innovation districts operate on similar lines. Much of the

parking in thriving mixed-use districts such as the downtown Berkeley (adjacent to UC Berkeley); downtown Palo Alto (adjacent to Stanford); and San Francisco's Mission Bay (home to the University of California, San Francisco's newest campus) is provided in shared, publicly available parking facilities, which have been established by a variety of public, campus and private-sector actors.

Case Study: University of California, San Diego (UCSD)

One successful example of a campus that relies upon many of the principles listed above is UCSD. At UCSD, both parking and many transportation services are provided by the University's Transportation Services Department.[6] In 1960, when UCSD was founded, the school was largely surrounded by vacant land and low-density suburban development. Transit service and bicycle facilities were minimal, and as a result, the vast majority of the faculty and staff drove to work. Those students who had access to a car did so as well.

As the campus grew and changed, and surrounding lands filled in with development, this picture changed. By 2000, the University was preparing for another 10,000 students at its landlocked campus. UCSD anticipated a need to build 15 parking structures over 20 years. To fund these structures, the campus would need to raise parking fees over tenfold.

To address this dilemma, UCSD quantified the full costs of adding new parking and compared those costs to investments in alternative transportation. First, UCSD staff and their consultants modeled price elasticity of demand for parking and the resulting mode shift from projected fee increases. Next, they estimated the cost per new trip shifted away from driving as a result of specific recommended improvements to the surrounding bicycle, pedestrian, and transit network. Finally, they were able to develop supply-and-demand charts that showed the estimated level of investment in parking, transit subsidy, bicycle and pedestrian programs, and related capital investments that would provide the most cost-effective access to the campus each year over 20 years. That determined that it was appropriate to build between four and six parking structures, and that 4,800 to 5,100 auto trips could be eliminated through strategic investment in TDM.

6 For more information, see: http://transportation.ucsd.edu/index.html. Accessed January 13, 2017.

For example, UCSD estimated that the cost to provide vehicle access to campus would be $2,400 per trip under the 15-structure parking program. Comparatively, the cost to provide access through TDM strategies was estimated at $900 per trip. As a result, it made better financial sense for the campus—and for parkers—to raise parking permit fees to pay for TDM than to raise parking fees to pay for new garages. The Plan was implemented in 2002.

Since implementation of the Plan, the drive-alone rate for UCSD commuters has dropped, falling from driving alone 66% in 2001 to 49% in 2008. That works out to a 25% decline in the drive-alone rate over the last seven years.[7] Capital costs for potential new parking structures at UCSD's had been estimated at $29,000 to $43,000 per net space gained. Thus, this large reduction in parking demand saved UCSD millions of dollars in parking construction costs, while lessening traffic impacts.[8] UCSD transportation planner Sam Corbett draws two key lessons from their experience:

- "Go green—sustainability and fiscal responsibility are integrally connected and often complement each other."
- "Let the prices do the planning—increasing costs of driving/parking are naturally leading people to more sustainable transportation options."

UCSD's success relies on two pillars. First, the UCSD Transportation Services Department provides excellent transportation options—ranging from free access to public transit (via UCSD's deep discount group transit pass programs), to bicycle, ride-share, car-sharing and pedestrian programs. Second, UCSD makes parking an optional amenity, paid for by user fees, rather than a required purchase whose cost is hidden in the cost of tuition, housing rents, or other goods and services. As a result, students and other campus affiliates can save money by using less parking—and many do.

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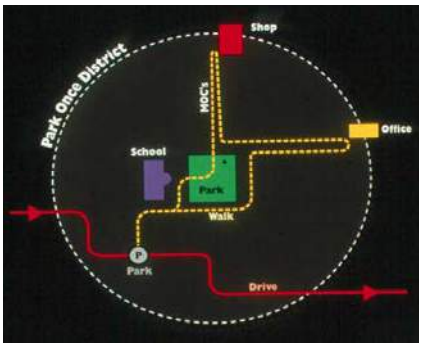
7 Note that while a decline in driving alone from 66% to 49% is a 17 percentage point decline, the math works out to a 25 percent reduction in driving alone.

8 See: http://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=5&cad=rja&uact=8&ved=0ahUKEwiQqvSPv-7MAhVH72MKHSlDAPgQFgg0MAQ&url=http%3A%2F%2Fdigitalcommons.calpoly.edu%2Fcontext%2Fsusconf%2Farticle%2F1067%2Ftype%2Fnative%2Fviewcontent&usg=AFQjCNGbfmpujgebCGl10fy1DS9hUC43Zg&sig2=rAAPzJCxny6wSLfmZfCUlQ. Accessed January 13, 2017.



Park Once Graphic

4.8.2. Implementing Strategies

The sections below describes specific implementing strategies, with an explanation of the goals and further discussion of each one.

Strategy #1: Pursue a "Park Once" Strategy

Goals: Make efficient use of the parking supply by including as many spaces as possible in a common pool of shared, publicly available spaces. Build a small number of cost-effective, strategically located parking facilities, rather than many unshared, inefficient and scattered private lots. Create a "Park Once" environment where most drivers park once near the District perimeter and then visit multiple destinations on foot, by bike or on a campus shuttle.

Strategy: Following the parking planning principles listed above will result in as many parking spaces as is feasible being included in a common pool of shared, publicly-available spaces. Locating the bulk of these shared parking facilities at the perimeter of the District, so that they naturally intercept motorists coming into the district from Hunte Parkway/Main Street, Eastlake Parkway and Otay Valley Road, will encourage a "Park Once" pattern of behavior.

Discussion: Fundamental to the creation of a thriving, compact mixed-use district is the creation of a "Park Once" environment. The typical suburban pattern of isolated, single use buildings, each surrounded by parking lots, requires two vehicular movements and a parking space to be dedicated for each visit to a shop, office, or civic institution. To accomplish three errands in this type of environment requires six movements in three parking spaces for three tasks. With virtually all parking held in separate hands, spaces are not efficiently shared between uses, and each building's private lots are therefore typically sized to handle a worst-case parking load. If a proposed walkable campus district attempts to provide typical suburban quantities of parking, with little or no sharing, the result will be a system that is costly and inefficient, and a land use pattern that is anything but compact. Applying conventional suburban parking ratios will generate freestanding office and retail boxes surrounded by cars, or pedestrian-hostile buildings that tower over parking lots; and the resulting low density fabric generates too few pedestrians to let the place reach critical mass.

When the suburban practice of building individual private lots for each building is introduced into a mixed-use district, the result is also a lack of welcome for customers and other visitors: at each parking lot, the visitor is informed that his vehicle will be towed if he or she visits any place besides the adjacent building. When this occurs, nearby shopping malls gain a distinct advantage over the retail shops in a district with fragmented parking. Mall owners understand that they should not divide their mall's parking supply into small fiefdoms: they operate their supply as a single pool for all of the shops and other uses, so that customers are welcomed wherever they park.

The compactness and mixed-use nature of the UI District lends itself to a "Park Once" strategy. Operating its parking supply as a single shared pool will result in significant savings in daily vehicle trips and required parking spaces, for three reasons:

1. Park Once: Those arriving by car can easily follow a "Park Once" pattern: drivers can park their cars just once and complete multiple daily tasks on foot before returning.

2. Shared Parking among Uses with Differing Peak Times: Spaces can be efficiently shared between uses with differing peak hours, peak days, and peak seasons of parking demand (such as classrooms, offices, restaurants, retail and entertainment uses).

3. Shared Parking to Spread Peak Loads: The parking supply can be sized to meet average parking loads (instead of the worst-case parking ratios needed for isolated suburban buildings), since the common supply allows academic buildings, shops and offices with above-average demand to be balanced by other institutional uses, shops and offices that have below-average demand or are temporarily vacant. It is important to realize that even within a single land use category (e.g. offices), parking demand per square foot of built space can vary by a factor of 10 or more.

Studies indicate that when a "Park Once" strategy is followed, the parking occupancy rates for mature, economically successful, mixed-use districts typically range from 1.5 to 2.0 spaces occupied per 1,000 square feet of nonresidential built space, or one-third to one-half the rates observed at many conventional suburban developments, with occasional outliers as low as 1.0 spaces per 1,000 square feet or as high as 3.0 spaces per 1,000 square feet. Table 4A: Actual Peak Parking Occupancy Rates Versus Built Supply in Selected Mixed-Use Districts provides a summary of actual peak parking occupancy rates for mixed-use districts in other cities where the consultant team has worked. For comparison, the table also shows the parking supply ratio in these districts, while the final column of the table shows the ratio of parking which goes unused at even the busiest hour.

Table 4A: Actual Peak Parking Occupancy Rates Versus Built Supply in Selected Mixed-Use Districts

City	Actual Peak Parking Occupancy/ 1,000 SF	Requirement/ 1,000 SF or Actual Built Supply/ 1,000 SF	Parking Unused at Peak Hour/ 1,000 SF
Hood River, OR	1.23	1.54	0.31
Oxnard, CA	0.98	1.70	0.72
Newport Beach, CA (Balboa Village)[1]	1.78	1.84	0.06
Corvallis, OR	1.50	2.00	0.50
Monterey, CA	1.20	2.14	0.94
Sacramento, CA	1.18	2.19	1.01
Seattle, WA (SLU)	1.75	2.50	0.75
Kirkland, WA	1.98	2.50	0.52
Palo Alto, CA	1.90	2.50	0.60
Santa Monica, CA	1.80	2.80	1.00
Ventura, CA (Westside)	1.26	2.87	1.61
Chico, CA	1.70	3.00	1.30
Hillsboro, OR	1.64	3.00	1.36
Bend, OR	1.80	3.00	1.20
Salem, OR	2.04	3.15	1.11
Lancaster, CA	1.37	3.67	2.30
Redmond, WA	2.71	4.10	1.39
Beaverton, OR	1.85	4.15	2.30
Soledad, CA	1.21	4.21	3.00

1 Reflects peak parking demand during the summer months, which is achieved on approximately 30-35 days per year.

Thanks to the efficiency of shared parking, these occupancy rates are observed even in mixed-use districts where the vast majority of employees and shoppers arrive by car. As shown in Table 4B: Summary of Parking Occupancy in Four Main Street Districts, our review of parking demand in four successful "Main Street districts" where 60% to 80% of employees drove alone to work found peak parking occupancy rates ranging from just 1.6 to 1.9 spaces per 1,000 square feet of non-residential built area.

To implement a "Park Once" strategy, parking in the District must be managed as a shared utility, just like streets and sewers, with available-to-the-public parking provided in strategically placed lots and garages. Non-residential development should be prohibited from building private parking, unless it is made available to the general public to lease or rent. In cases where private tenants, such as office tenants, desire a guaranteed number of spaces at particular hours (e.g., Monday through Friday, 9 a.m. to 5 p.m.), tenants should be provided with the opportunity to lease spaces with an exclusive right of use during the hours required. Such arrangements leave the parking available during evening and weekend hours for other users (e.g., restaurant patrons or evening class participants), resulting in efficient sharing of the parking supply and lower costs for all.

Table 4B: Summary of Parking Occupancy in Four Main Street Districts

City	Population	Mode Split[1]							Occupied Parking Spaces/ 1,000 SF[3]
		Drove Alone	2 or More Person Carpool	Transit	Bicycle	Walked	Other Means	Worked at Home	
Chico	59,900	61%	12%	1%	11%	13%	1%	1%	1.7
Palo Alto	58,600	80%	9%	4%	3%	3%	1%	0%	1.9
Santa Monica	84,100	74%	11%	11%	1%	2%	1%	0%	1.8
Kirkland, WA[2]	45,600	77%	12%	4%	0%	2%	1%	4%	1.6

1 Source: Census Transportation Planning Package (CTPP) 2000.

2 Commuter mode split for Kirkland, Washington is not limited to the main street district, but covers commuting to the entire city, due to lack in data from CTPP 2000.

3 SF refers to occupied non-residential built area in Chico and Palo Alto and both vacant and occupied non-residential built area in Santa Monica and Kirkland.

Overall, the benefits of the fully implementing a "Park Once" strategy for the District include:

- More welcoming of visitors (fewer "Thou Shalt Not Park Here" signs scattered throughout the District).
- Allows fewer, strategically placed lots and garages, resulting in better urban design and greater development opportunities.
- Enables construction of larger, more space-efficient (and therefore often more cost-effective) lots and garages.
- Meets tenants' needs more efficiently, reducing both capital and operations costs for parking.

Finally, and perhaps most importantly, by transforming motorists into pedestrians, who walk instead of drive to different District destinations, a "Park Once" strategy is an immediate generator of pedestrian life, creating crowds of people who animate public life on the streets and generate the patrons of street-friendly retail businesses.

Strategy #2: Prepare a "3-Stage" Parking Model to Forecast Demand

Goals: Develop and regularly update useful models for forecasting parking demand, revenues, costs and supply needs, and ensure that the models are sensitive to key variables, including parking price, TDM measures, and (when available) characteristics of individual tenants.

Strategies:

Stage 1: Customize a shared parking spreadsheet model, such as the Urban Land Institute's Shared Parking model, to provide initial estimates of parking demand for the proposed development program under various shared parking scenarios. Tailor the model to ensure that key variables (e.g., parking price) are taken into account.

Stage 2: When specific prospective tenants are identified, update the model where possible with data specific to each prospective tenant (e.g., employees per square foot) to provide refined estimates.

Stage 3: After initial phases of the District are occupied, calibrate and then refine the model using data gathered from actual parking counts in the area's lots, in order to provide more refined estimates for the project's later phases. (Examples: University District Parking & TDM Plan, San Marcos, CA; Genentech Campus Plan, South San Francisco, CA; etc.)

Discussion: Shared parking models are a key tool for estimating the benefits of employing a shared parking strategy in areas where major mixed-use development is planned. For example, the customized shared parking model prepared by Nelson Nygaard Consulting for the University District in San Marcos, CA, revealed that if only limited sharing of parking was instituted in this major mixed-use and campus-adjacent transit-oriented development, about 9,000 parking spaces would be required, at a cost of approximately $225 million. A scenario with greater sharing of parking (as shown in Figure 4P: Shared parking model results for the University District in San Marcos, CA) required only about 5,300 parking spaces at a cost of just $133 million, allowing a savings of $92 million dollars in capital costs, as well as additional savings on operations. Models should be further customized when actual prospective tenants are identified, since even within single land use categories, actual demand varies widely by tenant, as well as by factors such as an employer's TDM policies.

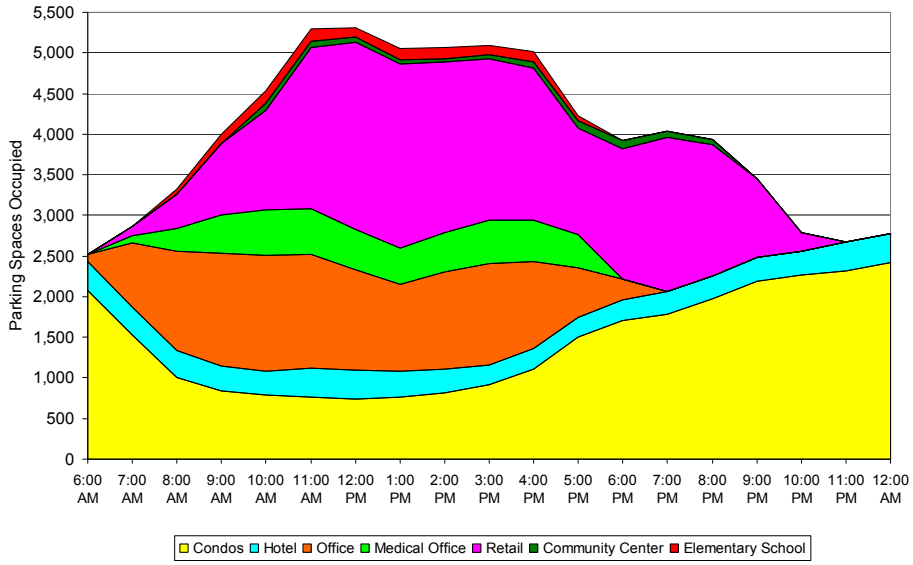


Figure 4P: Shared parking model results for the University District in San Marcos, CA

Strategy #3: Establish a Department to Provide Parking and Transportation Services

Goals:

Goal 1: Establish an organizational entity capable of developing, operating and maintaining shared parking facilities, curb parking, and other transportation programs serving the District in a manner that is both efficient and sensitive to local needs.

Goal 2: Establish a financial entity capable of collecting, receiving and spending parking revenues, as well as other funding sources, such as grants, fees and assessments.

Strategy: Form a UI District Parking and Transportation Department (i.e., a City department or division, or department within a non-profit entity) to build and operate District lots and garages, and to provide other transportation facilities, programs and services. Fund this parking by renting and potentially leasing spaces to employers, employees, residents, transit patrons and other users on a monthly, daily and/or hourly basis. Devote all revenues from both curb parking and public off-street facilities to the District. (Examples: University of California, San Diego; downtown Boulder, CO; Portland, OR; San Francisco, CA,)

Discussion: Many successful mixed-use and campus-adjacent districts have developed parking districts, using a wide variety of organizational forms and approaches. Typically, these districts are charged with developing, operating, enforcing and managing their area's shared parking lots and garages. Such districts frequently also take on a variety of other tasks, such as managing and enforcing curb parking, providing streetscape improvements and maintenance, district-wide marketing and events, or providing security and "district ambassadors" to assist customers. The best of these districts often also invest in a wide variety of measures that cost-effectively reduce parking demand.

Districts may provide these services in-house, contract out to private firms or nonprofits, or collaborate with City departments and other public agencies to get these jobs done. Subsequent planning efforts, which are beyond the scope of this plan, will be required to determine the most appropriate governance and legal framework for the UI District Parking and Transportation Department. Governance alternatives for this function include the following:

- The UI District Parking and Transportation Department may be established and staffed as an operation within an existing City department, such as Finance and/or Public Works. Potentially, the essential activities of this proposed department could also be shared between multiple departments. Precedents for managing shared public parking facilities within existing City departments include Chula Vista's Downtown Parking District, and similar municipal parking districts throughout California.
- The UI District Parking and Transportation Department may also be established and staffed as a distinct new entity within the City, such as a municipal Parking Authority.
- Alternatively, the UI District Parking and Transportation Department may be established as a unit within the Chula Vista University Partnership, a new non-profit entity currently being formed by the City to facilitate development of the UI District and ensure implementation of its development goals.

Many cities, including Boulder, Colorado; Portland, Oregon; and Berkeley, Pasadena, Redwood City, San Diego, and Ventura in California, have adopted the practice of returning curb parking revenues and public parking facility revenues to the blocks where the revenue is collected, often using mechanisms such as parking districts and business improvement districts to accomplish this. Specific district-wide organizations which take on the types of tasks described above include:

- The Central Area General Improvement District (CAGID) and the Downtown Management Commission in Downtown Boulder, CO.
- The Lloyd District Transportation Management Association (TMA) in Portland.
- Transmanage, the transportation arm of the Bellevue Downtown Association in Bellevue, WA.

Regardless of the particular organizational structure implemented, a focused effort, with dedicated and well-trained staff, should be used to implement a cost-effective parking and TDM strategy and to then manage the ongoing operation of the system. Important tasks to be handled include:

- Establishing the Parking District and managing it thereafter. This would include installing and operating the parking pricing system, monitoring parking occupancy and proposing rate adjustments, overseeing collection and expenditure of parking revenues, and in general, operating the District parking system in a customer-friendly way.
- Establishing and managing the "Park Once" strategy for parking, working to ensure that parking is managed and operated as a common pool. This would include both everyday operations, and potentially leasing public spaces to new development when necessary.
- Establishing and managing alternative transportation programs for the District (as suggested in Strategies 4 and 5) to ensure that the District invests in the most cost-effective mix of parking, transit, ride-share, bicycle and pedestrian improvements.
- Explain and assist in enforcing any TDM requirements.
- Creating mechanisms (such as regular advisory board meetings, surveys, etc.) for soliciting ongoing input from university affiliates, businesses, visitors and other key stakeholders and resolving stakeholder concerns.

In addition, parking prices should be set, and investments in any public parking facilities considered, with the goal of ensuring that parking fees cover the full cost of building and operating the parking supply. Since Chula Vista's goal is to encourage walking, bicycling and transit, and to reduce vehicle trips and their associated ills, subsidizing automobile use should be avoided, and scarce public funds reserved to fund transportation strategies which reduce the need for parking. The sole exception may be the provision of free or below-cost parking for shoppers. If such parking is provided (as may be necessary to persuade retail tenants to sign leases for space in the District), the cost of this parking should be recovered by either: (a) requiring merchants to reimburse the parking system for the cost of providing validated parking to its customers, or (b) providing the first 60 or 90 minutes free to all users of off-street parking facilities in primarily retail blocks and then covering the cost of this parking via common area maintenance fees or other assessments charged to retail and restaurant establishments.

Strategy #4: Invest in TDM

Goal: Invest in the most cost-effective mix of transportation modes for access to the District, including and TDM strategies using parking fees.

Strategy: Invest parking revenues in a full spectrum of TDM strategies for employees and residents, including transit, carpool, vanpool, bicycle and pedestrian programs.

Discussion: The cost to construct new parking structures in the District can be expected to be in the neighborhood of $25,000 per space, resulting in a total cost to build, operate and maintain new spaces of approximately $160 per month per space, every month for the expected 35-year lifetime of the typical garage. These dismal economics for parking garages lead to a simple principle: it can often be cheaper to reduce parking demand than to construct new parking. Therefore, the District should invest in the most cost-effective mix of transportation modes, including both parking and TDM strategies.

By investing in the following package of demand-reduction strategies, the City can significantly and cost-effectively reduce parking demand (and traffic) in the District. The District should invest a portion of parking revenues (and other fees, grants, and/or transportation funds, when available) to establish a full menu of transportation programs for the benefit of all District residents and employers. Strategy 5, having the Parking and Transportation Department handle the functions of a TMA, suggests an organizational structure for accomplishing this. Specific programs may include:

- Carpool & Vanpool Incentives. Provide ride-sharing services, such as a carpool and vanpool incentives, customized ride-matching services, and an active marketing program to advertise the services to employees and residents.
- Centralized funding and provision of bicycle facilities, programs and services, such as bike-sharing pods; a transit station area bike station offering secure bicycle parking, repairs, rentals and accessories; personalized route planning assistance for bicycle commuters, and marketing of events such as Bike to Work Day.
- Transportation Resource Center. A website and office providing personalized information on transit routes and schedules, carpool and vanpool programs, bicycle routes and facilities and other transportation options. Parking operations and administration could be housed here as well.

- Deep Discount Group Transit Passes (Eco-Passes). As described more fully in Strategy 6, a deep discount group transit pass program could provide free transit passes for every employee and resident of the District. The annual passes would be purchased at a deeply-discounted bulk rate by the Parking and Transportation Department from the MTS.
- Participation in SANDAG's "icommute" program that includes online ridematching, a vanpool subsidy program, transit solutions, regional support for biking, the Guaranteed Ride Home program, information about teleworking, and bike and pedestrian safety program support for schools.
- Guaranteed Ride Home. Establishing a Guaranteed Ride Home program (offering a limited number of emergency taxi rides home per employee), is an inexpensive, but important component of ride-sharing and parking cash-out programs, as the fear of needing a ride home in case of an emergency during the work day is one of the most cited obstacles to ride-sharing or transit use.

Three excellent examples of Parking and Transportation Departments/Districts that use parking revenues to invest in transportation alternatives are UCSD's Transportation Services Department, Boulder's CAGID and the Lloyd District TMA in Portland, Oregon.

Strategy #5: Have the Parking & Transportation Department Serve as the District's TMA

Goal: Effectively manage and market TDM programs throughout the District in order to cost-effectively reduce parking demand, while providing better transportation choices to District employers, employees, students and residents.

Strategy: Establish the Parking and Transportation Department as the District's TMA, responsible for the management and promotion of alternative transportation programs.

Discussion: A TMA is typically a non-profit corporation that both markets and promotes alternative transportation services and programs, and provides those services to employers, employees and project sites. TMAs generally have boards – either governing or advisory – with substantial representation from the employers whose employees are designed to serve, and/or the other types of real estate development (such as apartment buildings) that they serve. TMAs have historically provided an effective way to reduce parking demand and vehicle trips, and often have been able to receive federal, state and local transportation funds to support their mission.

The TMA model, with its public-private nature and its ability to receive public transportation funding to support its mission, provides a proven model for delivering many of the kinds of carpool, vanpool, bicycle, and transit pass programs described under Strategy #4. If the Parking and Transportation Department serves as the District's TMA, it will be able to provide services district-wide, including to all owners and tenants (initial and future) within the District. If this model is followed, a condition of development approval should be that tenants and leaseholders within the District join (including paying dues to) the TMA. Depending on the size of the TMA, the Association should be managed by either a full- or part-time Transportation Coordinator. In carrying out this function, the Parking and Transportation Department should also piggyback on and promote services already provided by SANDAG's iCommute, the TDM program for the San Diego region, and the 511 transportation information service. The Parking and Transportation District would also take on responsibility for district-wide promotions and marketing, providing information and commute assistance to employees, and monitoring the success of these programs.

How Effective Are These Programs?

Consider one example: ride-sharing (i.e., carpooling & vanpooling) is one of the most common and cost-effective alternative modes and one which commuters can adopt part-time. Studies indicate that ride-sharing programs typically attract 5-15% of commute trips if they offer only information and encouragement, and 10-30% if they also offer financial incentives such as parking cash-out or vanpool subsidies (Source: York and Fabricatore, 2001). The most effective programs are those implemented in conjunction with paid parking, subsidies for alternative modes, and other incentives.

Strategy #6: Provide Deep Discount Group Transit Passes

Goal: Increase transit ridership and provide incentives for residents to reduce vehicle ownership by providing free transit passes to all District residents and employees.

Strategy: Use Parking and Transportation Department revenues to provide free transit passes to all District employees and residents. Alternatively, employers and residential developments can be required to provide funding to purchase passes for their buildings' employees and residents.

Discussion: In recent years, growing numbers of transit agencies have teamed with universities, employers or residential neighborhoods to provide deep discount group transit passes. These passes typically provide unlimited rides on local or regional transit providers for low monthly fees, often absorbed entirely by the employer, school, or developers. A typical example of a deep discount group transit pass program is the Eco-Pass program in downtown Boulder, which provides free transit on Denver's Regional Transportation District (RTD) light rail and buses to more than 10,000 employees, employed by 1,200 different businesses in downtown Boulder. To fund this program, Boulder's CAGID, which functions as the downtown parking district, pays a flat fee for each employee who is enrolled in the program, regardless of whether the employee actually rides transit. Because virtually every employee in the downtown is enrolled in the program, the Regional Transportation District in turn provides the transit passes at a deep bulk discount.

A review of existing deep discount group transit pass programs found that the annual per employee fees are between 1% and 17% of the retail price for an equivalent annual transit pass. The principle of group employee and residential transit passes is similar to that of group insurance plans—transit agencies can offer deep bulk discounts when selling passes to a large group, with universal enrollment, on the basis that not all those offered the pass will actually use them regularly.

As Table 4C: Mode shifts achieved with free transit passes illustrates, free transit passes are usually an extremely effective means of reducing vehicle trips and parking demand. Reductions in drive alone mode share of four to 22 percentage points have been documented, with an average reduction of 11 percentage points. By removing any cost barrier to using transit, including the need to search for spare change for each trip, people become much more likely to take transit to work or for non-work trips.

TABLE 4C: MODE SHIFTS ACHIEVED WITH FREE TRANSIT PASSES

Location	Drive to work		Transit to work	
Municipalities	Before	After	Before	After
Santa Clara (VTA)[1]	76%	60%	11%	27%
Bellevue, Washington[2]	81%	57%	13%	18%
Ann Arbor, Michigan[3]	N/A	(4%)	20%	25%
Universities	Before	After	Before	After
UCLA[4] (faculty and staff)	46%	42%	8%	13%
Univ. of Washington, Seattle[5]	33%	24%	21%	36%
Univ. of British Colombia[6]	68%	57%	26%	38%
Univ. of Wisconsin, Milwaukee[7]	54%	41%	12%	26%
Colorado Univ. Boulder (students)[8]	43%	33%	4%	7%

1. Santa Clara Valley Transportation Authority, 1997.

2. 1990 to 2000; http://www.commuterchallenge.org/cc/newsmar01_flexpass.html. Accessed January 13, 2017.

3. White et. al. "Impacts of an Employer-Based Transit Pass Program: The Go Pass in Ann Arbor, Michigan."

4. Jeffrey Brown, et. al. "Fare-Free Public Transit at Universities." *Journal of Planning Education and Research* 23: 69-82, 2003.

5. 1989 to 2002, weighted average of students, faculty, and staff; From Will Toor, et. al. *Transportation and Sustainable Campus Communities*, 2004.

6. 2002 to 2003, the effect one year after U-Pass implementation; From Wu et. al, "Transportation Demand Management: UBC's U-P ass – a Case Study," April 2004.

7. Mode shift one year after implementation in 1994; James Meyer et. al., "An Analysis of the Usage, Impacts and Benefits of an Innovative Transit Pass Program," January 14, 1998.

8. Six years after program implementation; Francois Poinsatte et. al. "Finding a New Way: Campus Transportation for the 21st Century," April, 1999.

A Cost-effective Transportation Investment

Many cities and institutions have found that trying to provide additional parking spaces costs much more than reducing parking demand by simply providing everyone with a free transit pass. For example, a study of UCLA's deep discount group transit pass program found building that new parking cost more than three times as much per space as reducing parking demand by providing transit passes ($223/month versus $71/month).

Strategy #7: Establish a Car-Sharing Program

Goal: Encourage car-sharing operators to establish operations within the UI District, thereby allowing District residents and employees to share cars when needed.

Strategies: The Parking and Transportation Department should encourage the establishment of a car-sharing service in the District with one or more strategically located shared vehicle "pods." In order to help establish car-sharing pods in the District, the City should consider the following strategies:

Strategy 1: Partially or fully subsidize operation costs for a specified term. (Example: Packard Foundation headquarters, Los Altos, CA).

Strategy 2: Provide other incentives, such as offering convenient and visible curb spaces to car sharing providers for locating car-sharing "pods." (Examples: Berkeley and San Francisco, CA).

Discussion: National car-sharing operators such as ZipCar, using telephone and Internet-based reservation systems, allow their members a hassle-free way to rent cars by the hour, with members receiving a single bill at the end of the month for all their usage. The shared cars are located at convenient neighborhood "pods."

This strategy has proven successful in reducing both household vehicle ownership and the percentage of employees who drive alone because of the need to have a car for errands during the workday. As a result, car-sharing can be an important tool to reduce parking demand.

For residents, car-sharing reduces the need to own a vehicle, particularly a second or third car. Recent surveys have shown that more than half of car-share users have sold at least one vehicle since joining the program in the San Francisco Bay Area. For employees, car-sharing allows them to take transit to work, since they will have a vehicle available for errands during the day.

With the development of the District as a dense, mixed-use area and the implementation of other strategies suggested in this plan (such as requiring that parking costs be unbundled from office leases and housing costs and that employers offer the option to employees to cash-out parking at work), car-sharing will become much more viable. If parking costs remain bundled into housing costs, or employee parking remains free with no cash-out program, then the prospects for successful car-sharing program will be considerably diminished.

Strategy #8: Price Curb Parking to Be Well-used, But Readily Available

Goals:

Goal 1: Efficiently manage demand for parking while accommodating faculty, staff, student, visitor, employee, and resident parking needs.

Goal 2: Put customers first: ensure spaces are usually available among even the most convenient "front door" curb parking spaces.

Strategies: Actively manage all curb parking, instituting regulations that establish curb parking pricing on any block where the available curb parking regularly fills up. Set parking prices on each block at the lowest rate required to achieve approximately a 15% vacancy rate. With rare exceptions, refrain from using time limits. Use modern parking technologies, such as pay-by-cell-phone, license plate recognition (allowing license plate to be used as "virtual parking permits") and credit-card accepting Smart Meters to implement parking pricing. Dedicate parking revenues to public improvements and public services that benefit the District. Task the Parking and Transportation Department with implementing these strategies.

Discussion: Pricing curb parking is a powerful strategy for managing curb parking. Often, mixed-use districts do not experience overall parking shortages but spot shortages and surpluses, which result from the lack of pricing incentives and information to direct motorists to where parking is available. Always available and convenient customer parking is of primary importance for retail to succeed, and is important for academic and other uses as well. To ensure some vacancies exist in the best, most convenient, front-door curb parking spaces, in the long run it will be crucial to have price incentives to persuade some drivers to park in the less convenient spaces (in adjacent lots or a block or two away): higher prices for the best spots, cheap or free for the less convenient lots.

Motorists can be thought of as falling into two primary categories: bargain hunters and convenience seekers. Convenience seekers are more willing to pay for an available front-door spot. Many campus short-stay visitors, shoppers and diners are convenience seekers: they are typically less sensitive to parking charges because they stay for relatively short periods of time, meaning that they will accumulate less of a fee than an employee or other all-day visitor. By contrast, many long-stay parkers, such as employees and students, find it more worthwhile to walk a block to save on eight hours' worth of parking fees. With proper pricing, the bargain hunters will choose currently underutilized lots, leaving the prime spots free for those convenience seekers who are willing to spend a bit more. For future retailers

that the City seeks to attract to the UI District and/or its adjacent retail streets, it will be important to make prime spots available for these convenient seekers: those who are willing to pay a small fee to park are also those who are willing to spend money in a center's stores and restaurants.

What are the alternatives to charging for parking?

The primary alternative that cities can use to create vacancies in prime parking spaces is to set time limits, and give tickets to violators. The "time limits and tickets" approach, however, brings several disadvantages: enforcement of time limits is labor-intensive and difficult, and employees and students, who quickly become familiar with enforcement patterns, often become adept at the "two-hour shuffle," moving their cars regularly or swapping spaces with a coworker several times during the workday. Even with strictly enforced time limits, if there is no price incentive to persuade employees and students to seek out less convenient, bargain-priced spots, they will probably still park in prime spaces.

For customers and other District visitors, strict enforcement can bring "ticket anxiety," the fear of getting a ticket if one lingers a minute too long (for example, in order to have dessert after lunch). As Dan Zack, Downtown Development Manager for Redwood City, CA, puts it, "Even if a visitor is quick enough to avoid a ticket, they don't want to spend the evening watching the clock and moving their car around. If a customer is having a good time in a restaurant, and they are happy to pay the market price for their parking spot, do we want them to wrap up their evening early because their time limit wasn't long enough? Do we want them to skip dessert or that last cappuccino in order to avoid a ticket?"

A recent Redwood City staff report summarizes the results found in downtown Burlingame, California:

> *"In a recent 'intercept' survey, shoppers in downtown Burlingame were asked which factor made their parking experience less pleasant recently...The number one response was 'difficulty in finding a space' followed by 'chance of getting a ticket.' 'Need to carry change' was third, and the factor that least concerned the respondents was "cost of parking.' It is interesting to note that Burlingame has the most expensive on-street parking on the [San Francisco] Peninsula ($.75 per hour) and yet cost was the least troubling factor for most people."*

This is not an isolated result. Repeatedly, surveys of shoppers have shown that the availability of parking, rather than price, is of prime importance.

What is the right price for parking?

If prices are used to ensure availability of prime parking spots, then what is the right price? An ideal occupancy rate is approximately 85% at even the busiest hour, a rate which leaves about one out of every seven spaces available, or one to two empty spaces on each block face. This provides enough vacancies that visitors can easily find a spot near their destination when they first arrive. For each block in the district, the right price is the price that will achieve this goal. This means that pricing should not be uniform: the most desirable spaces need higher prices, while less convenient blocks are cheap or free. Prices should also vary by time of day and day of week: for example, higher at noon, and lower at midnight.

Ideally, parking occupancy for each block should be monitored regularly, and prices adjusted regularly to keep enough spaces available. In short, prices should be set according to demand, so that just enough spaces are always available. Professor Emeritus Donald Shoup of UCLA advocates setting prices for parking according to the "Goldilocks Principle":

> *"The price is too high if many spaces are vacant, and too low if no spaces are vacant. Children learn that porridge shouldn't be too hot or too cold, and that beds shouldn't be too soft or too firm. Likewise, the price of curb parking shouldn't be too high or too low. When about 15 percent of curb spaces are vacant, the price is just right. What alternative price could be better?"*

If this principle is followed, then there need be no fear that pricing parking will drive customers away. After all, when the front-door parking spots at the curb are entirely full, underpricing parking cannot create more curb parking spaces for drivers, because it cannot create more spaces. And, if the initial parking meter rate on a block is accidentally set too high, so that there are too many vacancies, then a policy goal of achieving an 85% occupancy rate will result in lowering the parking rate until the parking is once again well used (including making parking free, if need be).

No time limits needed

Once a policy of variable rate pricing is adopted, with the goal of achieving an 85% occupancy rate on each block, even at the busiest hours, then time limits might actually

be eliminated. With their elimination, much of the worry and "ticket anxiety" for visitors disappears. In Redwood City, where this policy was adopted in 2006, Dan Zack describes the thinking behind the City's decision in this way:

> *"Market-rate prices are the only known way to consistently create available parking spaces in popular areas. If we institute market-rate prices, and adequate spaces are made available, then what purpose do time limits serve? None, other than to inconvenience customers. If there is a space or two available on all blocks, then who cares how long each individual car is there? The reality is that it doesn't matter."*

Technologies for Pricing Curb Parking

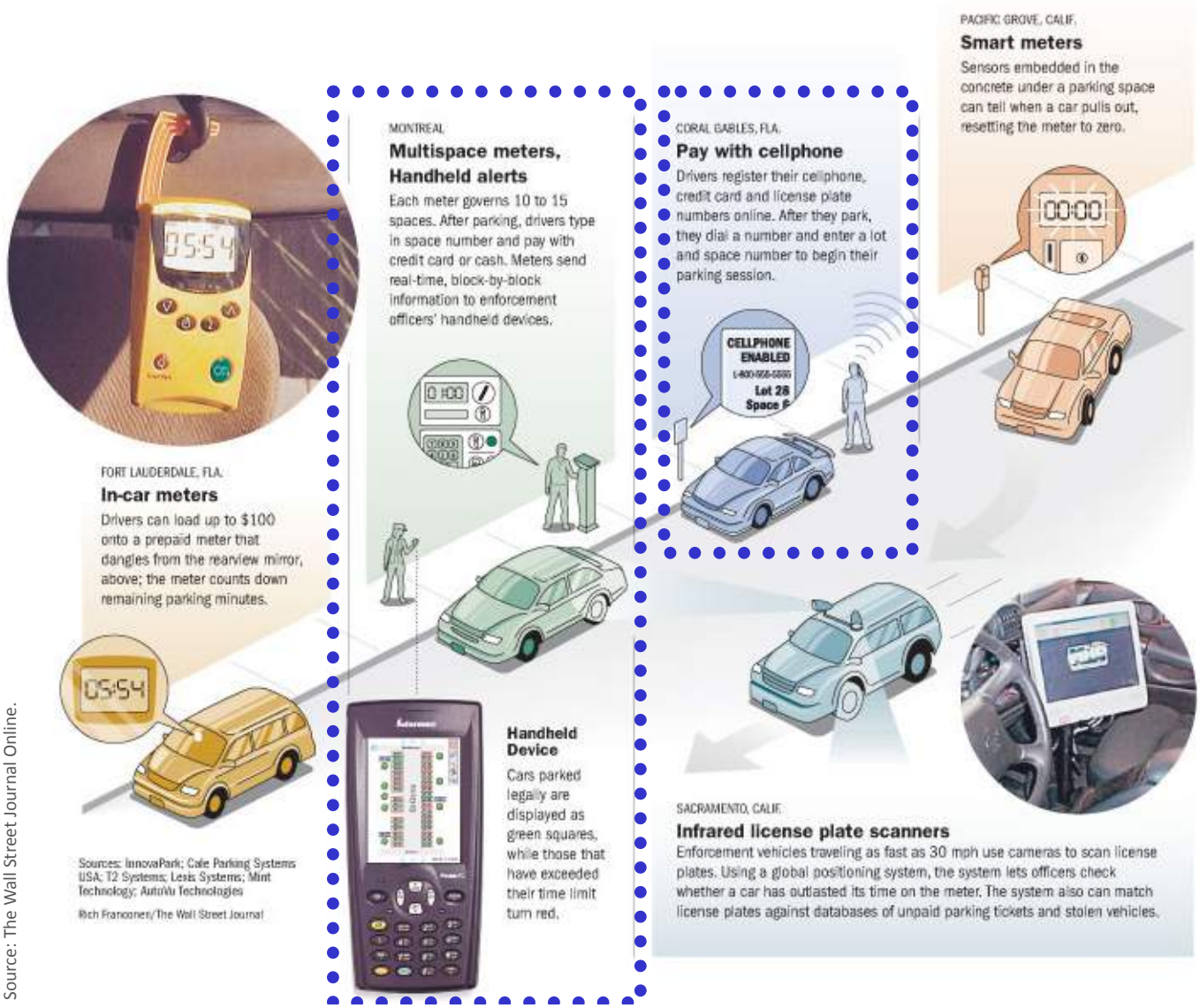
Modern parking technologies offer the ability to:

- Maximize ease of use in order to increase customer convenience.
- Minimize capital and operations costs.
- Provide real-time data on parking transactions and revenues.
- Make physical parking equipment (e.g., meters, access gates, etc.) wirelessly networked, allowing parking managers to access real-time data on transactions, revenues and equipment status, and to easily adjust parking meter rates and hours of operation.

Examples of various parking pricing technologies are illustrated in Figure 4Q Examples of Available Parking Pricing Technologies.

For pricing curb parking in the District, the most appropriate technologies to achieve the benefits cited above may be the following:

- Smart Meters for high demand blocks with high turnover rates (such as retail blocks), with a pay-by-cell-phone option added. Smart Meters, manufactured by vendors such as IPS, are solar-powered and wirelessly networked single-space parking meters which accept both coins and credit cards.
- Pay-by-cell-phone and license plate recognition technology to enable permit parking (with vehicle license plate serving as "virtual permits") in lower demand areas, which can be supplemented by paper permits available from parking kiosks and other outlets, as described below.



Source: The Wall Street Journal Online.

FIGURE 4Q EXAMPLES OF AVAILABLE PARKING PRICING TECHNOLOGIES

Pricing Curb Parking No Longer Requires Any Physical Infrastructure, Except Signs

In the 21st century, pricing curb parking no longer requires any physical infrastructure, with the exception of signs to inform drivers that they must pay for parking on the blocks where pricing is in effect. Now that cell phones are ubiquitous, many cities rely primarily on pay-by-cell-phone systems to charge for curb parking. For the rare driver without a cell phone, old-fashioned paper permits for parking can be purchased at retail outlets and parking kiosks (i.e., wirelessly-networked multi-space meters, with one or two provided per curb parking area or parking facility), but in numerous cities, physical parking meters are almost extinct. Such systems have been widespread for more than a decade in Central and Eastern European cities, such as Warsaw, Poland, and Tallinn, Estonia.

Additionally, for residential parking permits, vehicle license plates can be used as "virtual parking permits," now that license plate recognition technology is widespread and increasingly inexpensive. It is no longer necessary to issue stick-on parking decals or rearview mirror "hangtags" to eligible residents and their visitors.

In the United States and Western Europe, these approaches have been somewhat slow to spread, thanks to the presence of many legacy parking meter systems and residential permit systems, and populations which are less accustomed to pay-by-cell-phone parking. However, as the advantages of and technologies for this approach become have become better known, these approaches have begun arriving in Western Europe (for example, in various neighborhoods in Great Britain and Germany) and in the United States, in cities such as Galveston, TX, and universities such as UC Irvine.

This District, where no physical parking infrastructure exists yet, but where curb parking management will surely be needed, may be an ideal place to establish a pilot program to demonstrate the benefits of these advanced technologies. For example, a demonstration project focused on pay-by-cell-phone parking, with a small number of wirelessly-networked multi-space meters serving as the backup option for motorists without cell phones, could allow the City to test this approach in the UI District's first parking facilities, where no ingrained motorist habits have been established. When success is demonstrated and any bugs have been resolved, the program can be expanded to additional blocks as the District builds out.

Dedicate curb parking revenues to public improvements and services that benefit the District.

Net revenues from pricing curb parking in the District should fund public improvements that benefit the District. ("Net revenues" means total parking revenues from the area, less revenue collection costs, such as purchase and operation of the meters, enforcement and the administration of the district.) If parking revenues seem to disappear into the City's General Fund, where they may appear to produce no direct benefit for the District, there will be little support for having parking fees, or for raising rates when needed to maintain decent vacancy rates. But when District tenants and leaseholders can clearly see that the monies collected are being spent for the benefit of their District, on projects that they have helped choose, they can be expected to become far more willing to support pricing—and if experience from other cities is any guide, many will become active advocates for the concept.

To ensure such continuing support for pricing curb parking and for continuing to raise rates high enough to ensure vacancies, it is always helpful to give stakeholders a voice in setting policies for the District, helping to decide how parking revenues should be spent, and helping oversee the operation of the District to ensure that the monies collected from their customers are spent wisely. The examples of business districts such as Old Pasadena and downtown Redwood City, California (described above), as well as Downtown Boulder and the Portland, Oregon's Lloyd District in Portland, offer good precedents showing how this can be done.

Strategy #9: Establish Residential Parking Benefit Districts, When Needed

Goal: Prevent excessive spillover parking into primarily residential blocks near the District, raise revenue to support neighborhood facilities and services, and keep curb parking on residential streets well-used but readily available.

Strategy: When and where necessary to prevent spillover parking from the District and maintain curb parking availability, implement one or more Residential Parking Benefit Districts for the residential streets near the District. Residential Parking Benefit Districts are similar to residential parking permit districts, but allow a limited number of commuters to pay to use surplus on-street parking spaces in residential areas, and return the resulting revenues to the neighborhood to fund public improvements.

Discussion: In order to prevent excessive spillover parking in residential neighborhoods (the phenomenon of non-residents filling up a residential street's curb parking, often in order to avoid nearby parking fees), many cities, including Chula Vista, implement residential parking permit districts (also known as preferential parking districts) by issuing a certain number of parking permits to residents, usually for free or a nominal fee. These permits allow residents to park within the district while all others are prohibited from parking there for more than a few hours, if at all. At least 132 other cities and counties in the US and Canada currently have such residential parking permit programs in effect. Residential permit districts also often seek to limit curb parking shortages resulting from residents using their off-site street parking spaces for storage and other uses, while parking too many of their own vehicles on the street.

Residential parking permit districts have several limitations. Most notably, conventional residential permit districts often issue an unlimited number of permits to residents without regard to the actual number of curb parking spaces available in the district. This leads to a situation in which on-street parking is seriously congested, and the permit functions solely as a "hunting license," simply giving residents the right to hunt for a parking space with no guarantee that they will actually find one. (An example of this Boston's Beacon Hill neighborhood, where the City's Department of Transportation has issued residents 3,933 permits for the 983 available curb spaces in Beacon Hill's residential parking permit district, a four-to-one ratio.)

Many conventional residential permit districts also leave substantial surplus curb parking available (especially during the day, when many residents are away), but the permit district prevents any commuters from parking in these spaces even if demand is high and many motorists would be willing to pay to park in one of the surplus spaces. In both cases, conventional residential parking permit districts prevent curb parking spaces from being efficiently used (promoting overuse in the former example and underuse in the latter).

To avoid these problems and limitations, the District could implement one or more residential parking benefit districts on residential streets, to prevent spillover when parking pricing is implemented within the District. These will prevent excessive spillover parking from commuters trying to avoid parking charges nearby, make efficient use of surplus parking, and can raise substantial revenue to benefit neighborhoods with improved public facilities and services.

Implementation

Implementation of residential parking benefit districts near the District would differ from conventional parking permit districts in several key ways. Implementation should:

- Make the program acceptable to existing residents by providing them with residential parking permits for free or at a nominal rate.
- Limit the number of permits given or sold to residents to a number that aims to achieve a peak hour occupancy rate of 85% or less, so that street parking is not overcrowded.
- Rather than entirely prohibit nonresident parking as with many conventional residential parking permit districts, sell permits for any surplus parking capacity to non-resident commuters at rates that aim to keep parking on each block well-used, but readily available.
- Charge for any non-resident parking allowed at rates that aim to result in no greater than an 85% occupancy rate.
- Use pay-by-cell-phone systems, multi-space meters, or in-vehicle meters for non-resident parkers rather than adhesive permits or rearview hangtags. (See Strategy 8, regarding pricing curb parking, for a discussion of technology options.)

Benefits of Residential Parking Benefit Districts

Residential parking benefit districts have been described as "a compromise between free curb parking that leads to overcrowding and [conventional residential] permit districts that lead to underuse [parking] benefit districts are better for both residents and non-residents: residents get public services paid for by non-residents, and non-residents get to park at a fair-market price rather than not at all."

Benefits of implementing residential parking benefit districts near the District include the following:

- Excessive parking spillover into neighborhoods will be prevented.
- Need for additional costly parking structure construction is reduced
- Residents will be consistently able to find parking spaces at the curb, even at full build-out of the District

Examples of Residential Parking Benefit Districts

Residential Parking Benefit Districts have been implemented in various forms in the following jurisdictions:

- Aspen, CO (non-resident permits: $5/day)
- Boulder, CO (resident permits $12/year; non-resident permits $312/year)
- Santa Cruz, CA (resident permits $20/year; non-resident permits $240/year)
- Tucson, AZ (resident permits $2.50/year; non-resident permits $200-$400/year, declining with increased distance from University of Arizona campus)
- West Hollywood, CA (resident permits $9/year; non-resident permits $360/year)
- Del Mar, CA
- Laguna Beach, CA
- Oceanside, CA
- Eugene, OR

Strategy #10: Do Not Apply Minimum Parking Requirements within the District

Goal: Encourage the use of shared public parking infrastructure, rather than unshared private lots; make the District attractive to truly transit-oriented tenants with low parking demand rates; provide maximum flexibility for efficient sharing of parking; and create a healthy market for parking, where parking spaces are bought, sold, rented and/or leased much like any normal commodity.

Strategy: Do not apply minimum parking requirements in the District, and instead use curb parking pricing and residential parking benefit districts ensure curb parking vacancies.

Discussion: In order for the City to realize its vision for the development of the District as a walkable, transit-oriented campus environment, particularly over the long-term, it will be necessary for the District's zoning to fully support those goals. Campuses, downtowns and other walkable mixed-use districts which follow the strategy of developing shared public parking facilities generally remove minimum parking requirements, since requiring new developments to build parking on-site discourages the use of the shared public lots. The simplest approach is to remove minimum requirements, as an increasing number of communities have done.

Below is a list of some of the many places, such as the entire nation of Great Britain, that have removed minimum parking requirements from various neighborhoods.

- Boulder, CO
- Coral Gables, FL
- Eugene, OR
- Fort Myers, FL
- Fort Pierce, FL
- Greenfield, MA
- Great Britain (entire nation)
- Hayward, CA
- Los Angeles, CA
- Miami, FL
- Milwaukee, WI
- Muskegon, MI
- Nashville, TN
- Olympia, WA
- Portland, OR
- San Francisco, CA
- Sandpoint, ID
- Seattle, WA
- Spokane, WA
- Stuart, FL

Minimum parking requirements, even relatively low ones, also frequently deter investment and reinvestment in mature mixed-use districts, particularly by developers who serve the niche markets of tenants (both residential and commercial) who rely heavily on transit, bicycling and walking, and have little or no need for on-site parking. In the long-term, therefore, as this District develops, redevelops and intensifies in use, current code requirements are likely to work against the City's overall goals for the area. By their very nature, minimum parking requirements are designed to ensure that Districts have more parking than would exist if the matter was left up to the market, and over the long-term, they therefore distort transportation choices toward automobile travel, while increasing housing costs and the cost of other goods and services.

The one useful purpose that minimum parking requirements do serve is to prevent spillover parking issues—provided that they are strict enough, and provided that no fees are charged at off-street lots. However, if the other strategies suggested in this chapter are adopted, pricing of curb parking will ensure that ample vacancies exist on the street. Where good curb parking management has been implemented, minimum parking requirements become superfluous, and only their unfortunate side effects remain.

Finally, removing minimum parking requirements in a newly developing area is often a good way to demonstrate that neighborhoods can flourish, and maintain ample curb parking availability, without relying on these regulations. For example, San Francisco's Mission Bay Plan, which has redeveloped the City's rail yards and surrounding areas into a thriving UC campus and innovation district, removed all minimum parking requirements from the area in 1998. The success of that policy has helped spur city leaders' decisions to remove minimum parking requirements from numerous other established San Francisco neighborhoods.

Strategy #11: "Unbundle" Parking Costs from the Cost of Other Goods and Services

Goal: Increase the affordability of college/university attendance, as well as housing and commercial leases, while reducing parking demand and vehicle trips.

Recommendation: Implement the principle of providing parking as a user fee-based service, with the costs of land, capital, operating and maintenance expenses related to the parking system recovered from the users of the parking system.

Discussion: Parking costs are often subsumed into the sale or rental price of offices and housing for the sake of simplicity, and because that is the more traditional practice in real estate. At some universities, parking costs are covered by higher tuition and other fees than would otherwise be needed. But although the cost of parking is often hidden in this way, parking is never free. Each space in a parking structure can cost upwards of $25,000, while in areas with high land values, surface spaces can be similarly costly.

Looking at parking as a tool to achieve transit-oriented goals requires some changes to status quo practices, since including parking spaces in higher education fees and in office and residential space leases as a mandatory feature, rather than optional amenity, increases automobile use and means that more parking spaces have to be provided to achieve the same rate of availability.

Providing parking as a user fee-based service means that institutions which locate in the District will have the freedom to rent or lease as few parking spaces as they wish. Institutions, whether they are public, private-sector or nonprofit, and whether they are academic or non-academic in nature, will have two basic options available for meeting the parking needs of their employees, students, residents, customers, visitors and other affiliates:

Option 1: Allow the business or institution to rent or lease spaces from the Parking and Transportation Department, and then provide them to their affiliates. For example, a private, for-profit biotech firm might purchase 100 parking permits for its employees, and provide them for free to those employees.

Option 2: Allow the business or institution to leave it up to each of its affiliates to rent or lease their own parking spaces on an individual basis, at their own cost. For example, a university locating in the District might simply leave it up to its students to decide whether or not to bring a car to campus. Those students would then purchase semester, monthly, daily or hourly parking on an individual basis. This latter approach follows the model used at all University of California and Cal State campuses, where the use of State funds to subsidize parking is prohibited by UC policy.

An example of requiring the unbundling of parking costs in office leases

Bellevue, Washington: Downtown Bellevue, WA, provides an example of the district which has grown and thrived, while using the strategy of unbundling parking costs to limit traffic congestion in parking demand. Bellevue requires downtown office buildings of more than 50,000 square feet to identify the cost of parking as a separate line item in all leases, with the minimum monthly rate per space not less than twice the price of a bus pass. For example, since the price of a monthly bus pass was $72 in 2003, the minimum price of a leased parking space was $144 a month. This requirement for "unbundling" parking costs does not increase the overall cost of occupying office space in a building because the payment for the office space itself declines as a result. In other words, unbundling separates the rent for offices and parking, but does not increase their sum. This innovative policy has several advantages. It makes it easy for employers to "cash-out" parking for employees (that is, to offer employees the value of their parking space as a cash subsidy if they do not drive to work), since employers can save money by leasing fewer spaces when fewer employees drive. It also makes it easier for shared parking arrangements to occur, since building owners can more easily lease surplus parking spaces to other users.

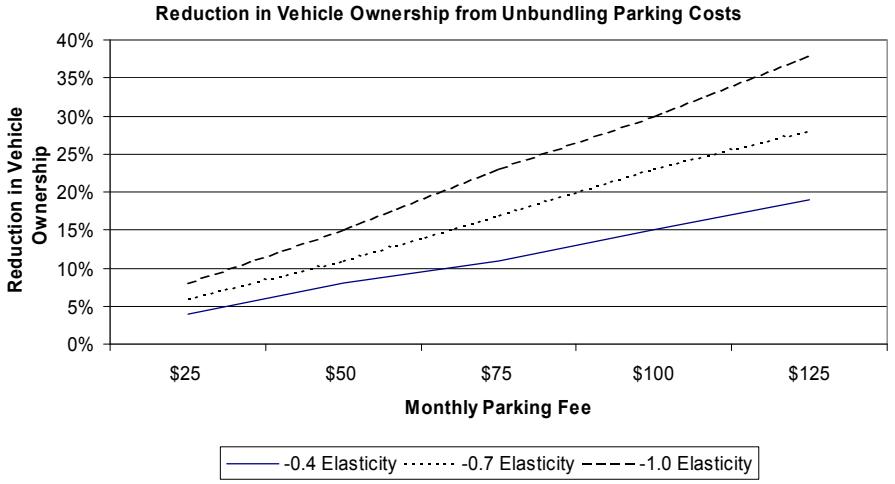
Unbundling parking costs from housing costs

When the strategy of unbundling is adopted, then for both rental and for-sale multifamily housing, the full cost of parking should be unbundled from the cost of the housing itself, by creating a separate parking charge. The exception to this policy should be any residences in the District with individual garages (such as townhouses)

rather than common, shared parking areas. This approach provides a financial reward to households who decide to dispense with one of their cars, and helps attract that niche market of households, who wish to live in a transit-oriented District where it is possible to live well with only one car, or even no car, per household. Unbundling parking costs changes parking from a required purchase to an optional amenity, so that households can freely choose how many spaces they wish to lease. Among households with below average vehicle ownership rates (e.g., low income people, singles and single parents, seniors on fixed incomes, and college students), allowing this choice can provide a substantial financial benefit. Unbundling parking costs means that these households no longer have to pay for parking spaces that they may not be able to use or afford.

It is important to note that construction costs for residential parking spaces can substantially increase the sale/rental price of housing. This is because the space needs of residential parking spaces can restrict how many housing units can be built within allowable zoning and building envelope. For example, a study of Oakland's 1961 decision to require one parking space per apartment (where none had been required before) found that construction cost increased 18% per unit, units per acre decreased by 30% and land values fell 33%.

Charging separately for parking is also an effective strategy to encourage households to own fewer cars, and rely more on walking, cycling and transit. According to one study, unbundling residential parking can significantly reduce household vehicle ownership and parking demand. These effects are presented in Figure 4R: Reduced vehicle ownership with unbundled residential parking.



Source: Litman, Todd. "Parking Requirement Impacts on Housing Affordability." Victoria Transport Policy Institute, 2004.

Figure 4R: Reduced vehicle ownership with unbundled residential parking

It is important that residents and tenants are made aware that rents, sale prices and lease fees are reduced because parking is charged for separately. Rather than paying "extra" for parking, the cost is simply separated out—allowing residents and businesses to choose how much they wish to purchase. No tenant, resident, employer or employee should be required to lease any minimum amount of parking.

Example: San Francisco's ordinance requiring the unbundling of parking costs from housing costs

By ordinance, San Francisco requires new residential buildings (as well as conversions of non-residential buildings to residential use) which contain 10 dwelling units or more to unbundle parking costs from housing costs. An exception to this requirement is granted for projects which include financing for affordable housing which requires that the cost for parking and housing be bundled together (a requirement which exists for some federal affordable housing tax credits).

Strategy #12. Require Parking Cash Out

Goal: Subsidize all employee commute modes equally and create incentives for commuters to carpool, take transit, and bike or walk to work.

Strategy: Require all employers that provide subsidized employee parking to offer their employees the option to "cash out" their parking subsidy.

Discussion: Many employers provide free or reduced price parking for their employees as a fringe benefit. Under a parking cash-out requirement, District employers will be able to follow this practice on the condition that they offer the cash value of the parking subsidy to any employee who does not drive to work. Employees who opt to cash out their parking subsidies would not be eligible to receive free parking from the employer, and would be responsible for their parking charges on days when they drive to work.

Benefits of Parking Cash Out

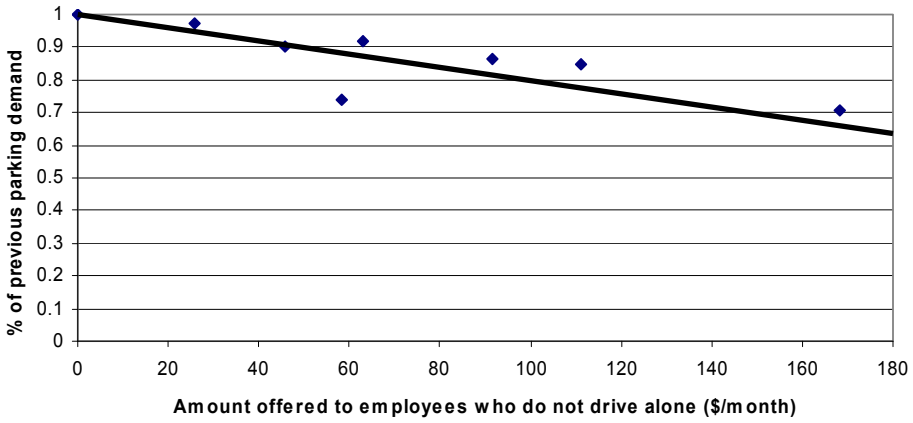
The benefits of parking cash out are numerous, and include:

- Provides an equal transportation subsidy to employees who ride transit, carpool, vanpool, walk or bicycle to work. The benefit is particularly valuable to low-income employees, who are less likely to drive to work alone.
- Provides a low-cost fringe benefit that can help individual businesses recruit and retain employees.

- Employers report that parking cash-out requirements are simple to administer and enforce, typically requiring just one to two minutes per employee per month to administer.

In addition to these benefits, the primary benefit of parking cash-out programs is their proven effect on reducing auto congestion and parking demand. Figure 4S: Effects of parking cash out on parking demand illustrates the effect of parking cash out at eight different employers located in and around Los Angeles. It should be noted most of the case study employers are located in areas that do not have good access to transit service, so that a large part of the reduced parking demand that occurred with these parking cash-out programs resulted when former solo drivers began carpooling.

Table 4D: Effect of financial incentives on parking demand outlines key research on commuter responsiveness to financial incentive programs implemented throughout the United States. The studies illustrate programs implemented in cities, colleges and by individual employers, covering tens of thousands of employees and hundreds of firms. The findings show that, even in suburban locations with little or no transit, financial incentives can substantially reduce parking demand. On average, a financial incentive of $70 per month reduced parking demand by over one-quarter. At the University of Washington, a financial incentive of just $18 per month reduced parking demand by 24 percent.



Source: Derived from Donald Shoup, "Evaluating the Effects of Parking Cash-Out: Eight Case Studies," 1997. Based on the cost in 2005 dollars.

Figure 4S: Effects of parking cash out on parking demand

TABLE 4D: EFFECT OF FINANCIAL INCENTIVES ON PARKING DEMAND

Location	Scope of Study	Financial Incentive/ Month (1995 $)	Decrease in Parking Demand
Group A: Areas with little public transportation			
Century City, CA[1]	3,500 employees at 100+ firms	$81	15%
Cornell University, NY[2]	9,000 faculty and staff	$34	26%
San Fernando Valley, CA[1]	1 large employer (850 employees)	$37	30%
Bellevue, WA[3]	1 medium-size firm (430 employees)	$54	39%
Costa Mesa, CA[4]	State Farm Insurance employees	$37	22%
Average		$49	26%
Group B: Areas with fair public transportation			
Los Angeles Civic Center[1]	10,000+ employees, several firms	$125	36%
Mid-Wilshire Blvd, LA[1]	1 mid-sized firm	$89	38%
Washington DC suburbs[5]	5,500 employees at 3 worksites	$68	26%
Downtown Los Angeles[6]	5,000 employees at 118 firms	$126	25%
Average		$102	31%
Group C: Areas with good public transportation			
University of Washington[7]	50,000 faculty, staff and students	$18	24%
Downtown Ottawa[1]	3,500+ government staff	$72	18%
Average		$45	21%
Overall Average		$67	27%

Sources:

1 Willson, Richard W. and Donald C. Shoup. "Parking Subsidies and Travel Choices: Assessing the Evidence." Transportation, 1990, Vol. 17b, 141-157 (p145).

2 Cornell University Office of Transportation Services. "Summary of Transportation Demand Management Program." Unpublished, 1992.

3 United States Department of Transportation. "Proceedings of the Commuter Parking Symposium," USDOT Report No. DOT-T-91-14, 1990.

4 Employers Manage Transportation. State Farm Insurance Company and Surface Transportation Policy Project, 1994.

5 Miller, Gerald K. "The Impacts of Parking Prices on Commuter Travel," Metropolitan Washington Council of Governments, 1991.

6 Shoup, Donald and Richard W. Wilson. "Employer-paid Parking: The Problem and Proposed Solutions," Transportation Quarterly, 1992, Vol. 46, No. 2, pp169-192 (p189).

7 Williams, Michael E. and Kathleen L Petrait. "U-PASS: A Model Transportation Management Program That Works," Transportation Research Record, 1994, No.1404, p73-81.

Example parking cash-out ordinances: California's "Parking Cash-Out" law and Santa Monica's local ordinance

California's parking cash-out law requires many employers which (a) offer subsidized parking to employees and (b) lease parking as a separate expense to offer the cash value of the subsidized parking space to any employee who does not drive to work. Several local jurisdictions have developed mechanisms to help enforce this cash-out law. For example, Santa Monica requires proof of compliance with the State's parking cash-out law before issuing occupancy permits for new commercial development.

An example of parking cash-out benefits: Genentech, South San Francisco, California

Genentech, a major biotechnology employer in South San Francisco, California, offers a $4 per day cash payment to any employee who does not drive to work. This parking cash-out program is part of an ambitious and comprehensive TDM program.

The cash payments for not driving to work, and other Genentech programs supporting transportation alternatives have had a measurable impact on Genentech's contribution to global climate change. In just one year, from 2006 to 2007, commute-related CO2 (carbon dioxide) emissions per employee declined by 8.6%.

Factors of success in Genentech's innovative TDM programs include:

San Francisco: Trip reduction requirements imposed by the City are specific and targeted, but provide ample flexibility for meeting goals.

Cost savings: Genentech was seeking to expand, so stood to realize cost savings ($100 million by their count) by reducing drive-alone commuting enough to avoid constructing additional parking. They realized it was cheaper to pay their employees not to drive than to build more parking.

Corporate culture: The TDM/Parking reform strategy was uniquely attractive to Genentech because it fits (a) the needs of their employees, many of whom are young, socially-minded professionals, who value commute alternatives, and (b) the corporate social responsibility strategy. Genentech wishes to be known as a good corporate citizen, doing its part for the environment by reducing drive-alone commuting.

CHAPTER 5:
RECREATION & OPEN SPACE

5.1. Background

The UI District is located in an area with many planned open space areas as described below.

5.1.1. Otay Valley Regional Park (OVRP)

The OVRP is a multi-jurisdictional planning effort by the City of Chula Vista, County of San Diego, and City of San Diego. The OVRP provides residents and visitors recreational opportunities ranging from playing fields and picnic areas to hiking, biking and horse trails while protecting open space, wildlife, historic, agricultural, and archaeological resources. The OVRP links south San Diego Bay with Upper and Lower Otay Lakes.

The OVRP Concept Plan was updated in 2017 and provides policy direction for the coordinated land acquisition and development of the regional park. The OVRP Concept Plan does not call for specific types of recreational development or provide detailed design plans for specific areas. These development decisions will be made as master plans and site specific development plans such as SPA Plans are prepared.

5.1.2. Chula Vista Parks Master Plan

The Chula Vista Parks Master Plan contains goals and policies that serve as the blueprint for creating a quality park system. The Plan establishes goals for the creation of a comprehensive parks and recreation system that meets the needs of the public by effectively distributing park types and associated recreation facilities and programs throughout the City. The Parks Master Plan is currently being updated.

5.1.3. Chula Vista Greenbelt Master Plan

The Chula Vista Greenbelt Master Plan implements an open space and trails concept which consists of connected open space surrounding the City of Chula Vista that includes the Sweetwater Valley and Otay Valley, connected by the Otay Lakes on the east and the San Diego Bay on the west. A primary trail system within the Greenbelt will consist of multi-use and rural paths which will total approximately 28 miles surrounding the City. The Greenbelt Master Plan addresses existing and potential trail locations, trail and staging area development standards and maintenance responsibilities. Portions of the Greenbelt include open space conservation areas established through the MSCP Program and the San Diego National Wildlife Refuge.

This chapter designates a variety of open spaces throughout the SPA and implements the goals, objectives, policies and implementation measures of the GDP and the Draft City of Chula Vista Parks Master Plan (anticipated approval by mid-2018). The network of open spaces helps define the District's character and provides a variety of active and passive recreational opportunities. Trails linking these open space areas are discussed in Chapter 4: Circulation Plan.

The City of Chula Vista requires a variety of recreational uses and open spaces to preserve natural resources and meet the social and recreational needs of the community. Permitted uses for each open space area are discussed in Chapter 3: Development Code. Open space areas are identified by Transect/Sectors and are subject to the requirements for O-3: Pedestrian Walk, O-2: Common Open Space and O-1: Open Space. Table 5A: Open Space Conveyance Obligation identifies and tabulates the Otay Ranch Preserve open space contribution required for development within the UI District.

5.2. Open Space

In accordance with the Otay Ranch RMP, the development of each Otay Ranch Village requires an open space contribution to the Otay Ranch Preserve. This requirement is equal to 1.188 acres of open space conveyance per one acre of development less the acreage of "Common Use Lands," i.e. local schools, universities, parks, arterial roads, and other lands designated as public use areas. The majority of development in the UI District is considered Common Use Lands. Only 131 acres of the UI District are considered non Common Use Lands. The acres of open space conveyance depends on the land use as determined when the development occurs. The 131 acres of Non-Affiliated land use will be multiplied by 1.188 acres of conveyance per developed acre as shown in Table 5A: Open Space Conveyance Obligation. Actual acreages shall be determined prior to recordation of final maps.

Table 5A: Open Space Conveyance Obligation

Development	Gross Acreage
Total SPA	384 acres
Land affiliated with the University and campus support uses: academic space and supporting uses, physical education/ recreation/athletics uses, student support space, campus housing, parking lots/structures and open space	-253 acres
Total Developable Acreage (minus acreage for common uses)	131 acres
Per Acreage Conveyance	x 1.188
Estimated Total Conveyance Acreage	155.63 acres(1)

(1) Final Conveyance acreage will be determined prior to recordation of final map

5.2.1. Open Space Preserve Development

The City's HLIT ordinance is applicable to campus development on the Lake Property and associated off-site areas since it occurs outside of the Covered Projects category in the City's MSCP Subarea Plan.

A. Appropriate Amenities & Facilities in the Preserve

Under limited circumstances certain amenities and facilities, as determined by the City to be compatible with the goals and objectives of the City's MSCP Subarea Plan and Otay Ranch RMP, may be permitted within the preserve. Any proposed amenities or facilities within the Preserve shall be subject to the prior review and approval of the Preserve Owner/Manager and the Development Services Director.

The following facilities will be located in the Preserve:

1. One off-site storm water conveyance line and detention basin is located south of the Main Campus Property in the Otay River Valley.
2. One off-site sewer conveyance line connecting to the Salt Creek Interceptor. Access to off-site facilities will be provided by an existing access road that extends from the existing access road for the Salt Creek Interceptor. The existing access road will require minor improvements to accommodate widths of up to 20 feet.

3. Additional off-site sewer facilities are located south and west of the Lake Property to the existing open space trail system. The existing trails may also provide access for maintenance. The sewer pipe would then follow the existing trail to the Salt Creek Sewer Interceptor. Some of this area is subject to the HLIT Ordinance.
4. Additional off-site storm water facilities are located east of the Lake Property within the City's limits. Off-site storm water conveyance and outfall facilities will occur within developed portions of Wueste Road and native habitat areas adjacent to and on either side of Wueste Road.

5.2.2. Preserve Edge

The portions of these slopes that are located within 100 feet of the Preserve are part of the Preserve Edge and shall be subject to the requirements of the Preserve Edge Plan (Appendix D). The intent of the Preserve Edge is to create a buffer zone between proposed development and the Otay Ranch Preserve, protecting the Preserve from human activity and non-native species. This area also includes Regional Trails.

A. Appropriate Amenities & Facilities:

1. Trails and supporting uses such as benches and signage; see 4.9.8 Regional Trail for regional trail standards.
2. No structures other than fences are permitted; All walls and fences shall be built and landscaped to minimize visual impacts on the Preserve, Otay Valley Regional Park, public rights-of-way, and views to open space.
3. Amenities and facilities within the Preserve Edge shall be restricted to types that are least likely to impact adjacent biological resources as further described in the Preserve Edge (Appendix D).

B. Landscaping:

1. Plants within the Preserve Edge shall consist of noninvasive, native plant species in accordance with Appendices E and F of the FPP (Appendix F).
2. Plants shall have an informal character consistent with neighboring planning areas.
3. Planting techniques such as clustering of trees and shrubs shall be used to screen or break-up large slope areas.

4. Native and drought tolerant species are preferred.
5. Turf shall not be permitted.
6. Landscaping shall be designed to minimize erosion, stabilize slopes, and provide a buffer between development and MSCP.
7. Grading techniques shall conform with the requirements of Chapter 8: Grading.

C. Paving and Surfaces:

1. All grading of trails shall meet the requirements set forth in Chapter 8: Grading.
2. Trails shall be constructed of decomposed granite; asphalt or concrete may be used where appropriate.

D. Lighting:

1. Lighting shall be limited to pathways and trails as required for safety.
2. Lighting shall be designed to minimize impacts to open space.
3. Trails are not required to provide lighting except as determined by the Development Services Director.
4. No lighting is permitted within the Preserve Edge.

E. Other Applicable Requirements:

1. City of Chula Vista Final MSCP Subarea Plan.
2. Otay Ranch RMP.
3. City of Chula Vista Greenbelt Master Plan.
4. Otay Valley Regional Park Concept Plan.
5. UI District FPP (Appendix F).
6. Requirements of Army Corps of Engineers, Wildlife Agencies, and/or other applicable management entities.

5.3. Parks - Market Rate Units

It is estimated that non-student residential population could be 6,000 people. This population is based on an assumed average household occupancy of 3.0 persons per household. The factors used by the Department of Development Services are: 3.30 per single-family residence, 3.1 per unit for mixed use (10 to 27 units per acre), and 2.58 per multi-family unit.

To meet the City threshold requirements, the amount of parkland dedicated is based on a standard of 3 acres per 1,000 residents (6000 residents/1000 residents x 3 acres = 18 acres). The standard is based on California Government Code Section 66477, also known as the Quimby Act, which allows a city to require, by ordinance, the dedication of land or payment of fees for park or recreational purposes or a combination of both.

All new development in Chula Vista is subject to the requirements contained in the City's Parkland Dedication Ordinance in Municipal Code Chapter 17.10. The ordinance establishes fees for parkland acquisition and development (PAD fees), sets standards for dedication, and establishes criteria for acceptance of parks and open space. Fees vary depending on the type of dwelling unit proposed. There are four types of housing identified in Section 17.10.040: single-family dwelling units (defined as all types of single-family detached housing and condominiums), multi-family dwelling units (defined as all types of attached housing including townhouses, attached condominiums, duplexes, triplexes, and apartments), and mobile homes. Multi-family housing is defined as any freestanding structure that contains two or more residential units.

The Parkland Dedication Ordinance (PDO) specifies a square foot of land area to be dedicated for each unit depending on type—single-family or multi-family. The PDO method is a slightly different approach to calculating the park acreage obligation than in the Quimby Act requirement. The actual composition of housing in the UI District is unknown at this time.

Table 5B: Parkland Dedication Requirements Based on Parkland Dedication Ordinance Standards

Dwelling Unit Type	Land Dedication per Unit	Park Dedication Requirement for 2,000 units
Multi-family	337 sq. ft.	15.5 acres

5.4. Open Space Sectors

The Open Space Sectors in the UI District will provide park-like amenities in a completely different way than typical City parks. Acreage devoted to Sector O-2 Common Land and Sector O-3 Pedestrian Walks provide recreational amenities and may be considered parks for the purposes of the GDP and Quimby Act. Their eligibility shall be determined by the Development Services Director.

The O-2 and O-3 amenities could include gathering places and that are flexible and can be used for multiple functions such as farmer's markets, art shows, and other events. They may also include gardens and urban spaces for quiet reflection. The O-1 sector may also provide recreation amenities.

Actual park acreages required by residential development in the UI District shall be determined prior to recordation of final maps. The City's Parks Division shall determine the eligibility of the Open Space sectors for park acreage and if additional dedication of acreage, construction of park facilities, or a combination of both is needed in order to meet the City's requirements.

5.4.1. Examples of Amenities & Facilities:

Below is a list of potential amenities and facilities that could be located in the Open Space Sectors

1. Play areas.
2. Academic sports facilities
3. Seating areas.
4. Flex-spaces.
5. Public plazas.
6. Water feature, statue, or other focal point feature.
7. Open areas.
8. Dog park.

Final amenities are not limited to those listed above.

5.4.2. Landscaping

1. Landscaping may have a more formal character consistent with an urban environment.
2. Landscaping of parks shall include some larger trees capable of providing shade for park users.
3. Shrub heights shall be limited to maximum visibility.
4. Turf shall be limited to reduce water demand.
5. Drought tolerant species are preferred.
6. See § 5.4.5. Open Space Sector Planting Palette.
7. All landscaping shall be in accordance with the City's Landscape Water Conservation Ordinance (CVMC 20.12) and the Landscape Manual.

5.4.3. Paving and Surfaces

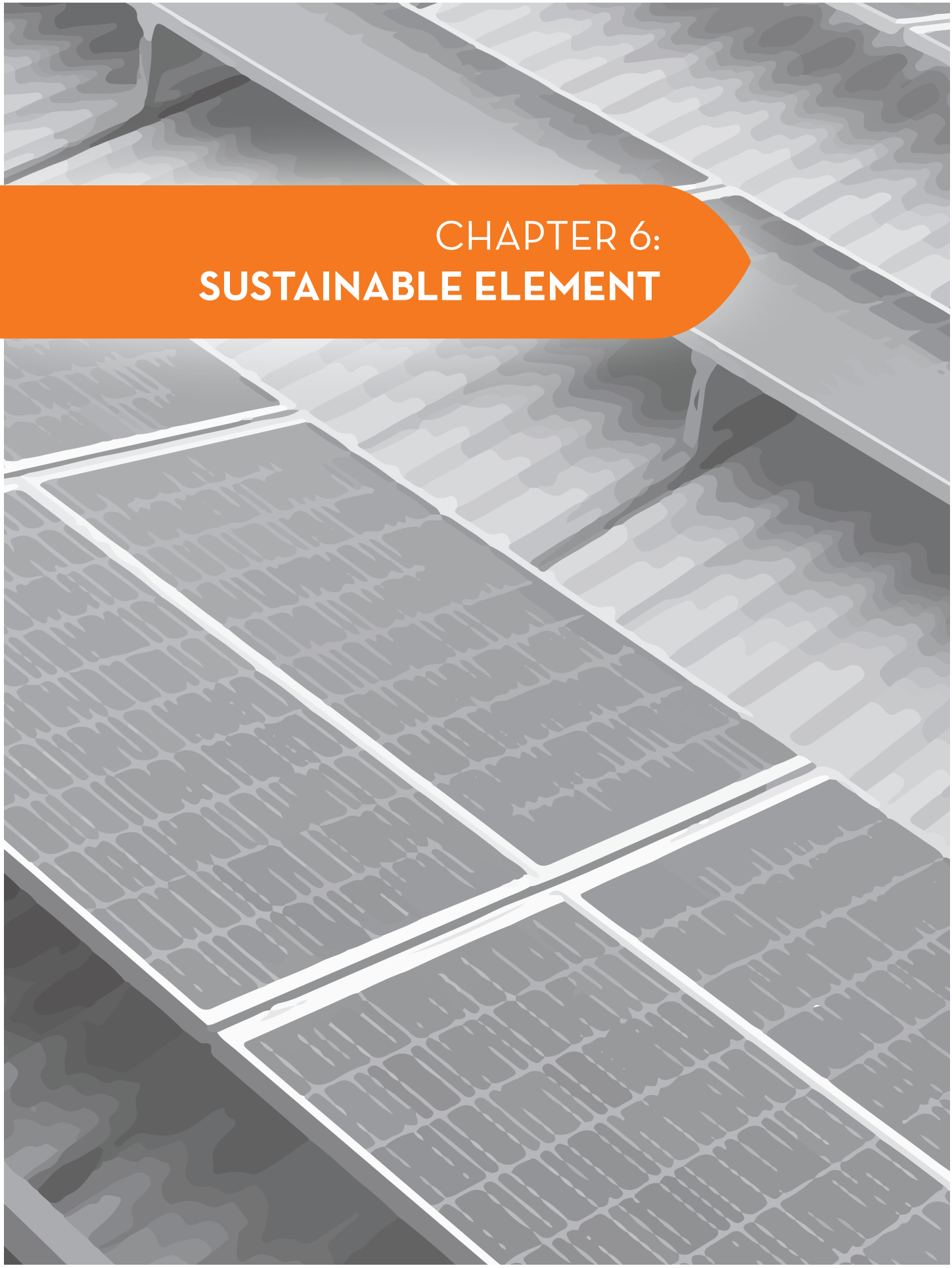
1. Pathways and plaza areas shall be concrete or other hard surface consistent with an urban character.
2. Decorative paving is encouraged to define gathering spaces and other special spaces.

5.4.4. Lighting

1. Lighting shall occur at all major activity areas and along major pathways for nighttime safety.
2. Lighting shall be designed to minimize light spillage onto neighboring properties.

5.4.5. Open Space Sector Planting Palette

The plant palette for open space sectors located outside the Preserve Edge shall be determined by the UI District Landscape Master Plan. Portions of open space sectors located within the Preserve Edge, shall be subject to the landscaping requirements of the Preserve Edge (Appendix D) and the Fire Protection Plan (Appendix F).



CHAPTER 6:
SUSTAINABLE ELEMENT

Energy, water, and raw building material resources are increasingly being stretched to meet new demand, and efficient use of these items is vital to future sustainability. Past planning of the built environment typically featured segregated land uses and transportation systems that favored the automobile over biking, walking, and transit use and favored easy to access fossil fuel-based energy systems over renewable energy systems.

Compact sustainable communities where people walk, bike, and ride transit are typically characterized by a more concentrated, diverse, and synergistic mix of land uses and a distinct sense of place with safe, attractive sidewalks, well-defined and connected bike routes, street-adjacent buildings that accommodate pedestrian-oriented uses, a variety of housing choices, and a rich, interconnected street grid that controls the speed and volume of vehicle traffic.

As defined by the United Nation's 1983 Bruntland Commission: "Sustainability promotes meeting the needs of the present without compromising the ability of future generations to meet their own needs. Its success is measured by the triple bottom line: environmental responsibility, economic prosperity, and social equity." The triple bottom line is also described as the "three Es" of sustainability.

Smart growth has been defined by the SANDAG as "a compact, efficient, and environmentally sensitive pattern of development that provides people with additional travel, housing and employment choices by focusing future growth away from rural areas and closer to existing and planned job centers and public facilities, while preserving open space and natural resources."

Sustainable and smart growth policies are built into the UI District framework, and fit into the broader context of sustainability by guiding development to preserve existing access to resources for future generations.

Table 6A: Potential Sustainable Performance Standards lists by category sustainable initiatives that are being implemented or could be implemented for the UI District.

The remainder of this Chapter describes the sustainable efforts by the following jurisdictions and non-government organizations:

- State of California
- SANDAG
- City of Chula Vista
- Green Organizations
  - USGBC
  - ACUPCC
  - AASHE
  - EPC
- Survey of Universities
  - Stanford
  - University of California
  - California State Universities

Finally the last section describes all the sustainable initiatives implemented in the UI District.

Table 6A: Potential Sustainable Performance Standards

Category	Description	Resolution
Third-party Certification	Require all development to obtain a third-party certification.	City to determine strategy at time of development.
Site Planning	Limit impacts to existing topography; set up grading criteria.	Reduces amount of land available for development.
	Control erosion.	Required by code.
	Conserve existing habitat; preserve drainage areas.	Reduces amount of land available for development.
	Preserve view corridors.	Plan provides view corridors.
	Maximum block size to promote walkablity: 300' to 450’ in length.	Plan provides walkable blocks
	Require each parcel to connect to UI District pedestrian system.	Each parcel is adjacent to the pedestrian system.
	Consider the Sustainable Sites InitiativeTM (SITESTM) strategies or certification in designing the UI District. SITESTM is a program based on the understanding that land is a crucial component of the built environment and can be planned, designed developed and maintained to avoid, mitigate, and even reverse detrimental impacts. Sustainable landscape create ecologically resilient communities to better able to withstand and recover from episodic floods, droughts, wildfires, and other catastrophic events. For more information, see the following link: http://www.sustainablesites.org/	City to determine strategy at time of development.
Mobility-Alternative Travel Modes	Establish pedestrian-friendly streets	Plan provides for pedestrian-friendly streets
	Provide for BRT, Rapid Bus, local bus and shuttle system.	Plan provides for systems.
	Provide for bicycle circulation	Circulation system provides for bicycles.

Table 6A: Potential Sustainable Performance Standards

Category	Description	Resolution
Mobility-Parking and TDM Recommendations	Pursue a "Park Once Strategy.	City to determine strategy at time of development.
	Prepare a 3-stage parking model to forecast demand.	
	Establish a Department to provide parking and transportation services.	
	Invest in transportation demand management.	
	Have the Parking & Transportation Department serve as the District's Transportation Management Association.	
	Provide deep discount group transit passes.	
	Establish a car-sharing program.	
	Price curb parking to be well-used but readily available.	
	Establish residential parking benefit districts, when needed.	
	Don't establish minimum parking requirements.	
	Unbundle parking costs from cost of other services.	
	Require parking cash out.	
Mobility-Other Parking Management Options	Prohibit freshman students from keeping cars on campus. Assuming an even distribution of students among the four undergraduate classes, a no car on campus policy could reduce the need for substantially.	City to determine strategy at time of development.
	Limit sale of parking permits of the remaining undergraduate students (sophomores, juniors and seniors). The surrounding homes in adjacent Villages will provide housing for many of the students.	
	Require a Student/University parking agreement to require students to walk to campus.	
Mobility-Alternative Vehicle Types	Require campus vehicles to be alternate fuel vehicles.	City to determine strategy at time of development.
	Require installation of EVSE stations for PEVs.	CALGreen requires all new development to plan for EVSE stations but not install the devices.
	UI Districts streets provides for NEVs.	All streets except Main Street/Hunte Parkway have speed limits of 35 mph or less.
Building Design (Improved Construction Standards)	All development will meet California Title 24 Part 6 Energy Standards and Part 11 Green Building Standards	Required by Code
	All development will be part of the local utility demand response program to limit peak energy usage for cooling.	Required by Plan.

TABLE 6A: POTENTIAL SUSTAINABLE PERFORMANCE STANDARDS

Category	Description	Resolution
Energy Production	Require the development to be a zero net energy community.	Required by EIR
	Require the use of a micro grid/cogeneration plants similar to Stanford University program.	Need to meet with SDG&E to determine how it would work with a project that is evolving over time.
	Require solar water heaters where applicable such as dorm buildings.	Determine if applicable to large scale water heaters.
Public Space Lighting	Require LED lighting for streets, parks and other public spaces.	City standard.
Water Conservation	Dishwashers and clothes washers to be high-efficiency.	Required by OWD.
	Indoor plumbing fixtures to meet CALGreen requirements.	Required by Code.
	Require pressure reducing valves to maintain the water pressure below 60 psi.	Required by Plan.
	High-efficiency irrigation equipment, such as evapotranspiration controllers, soil moisture sensors and drip emitters, will be required for all projects that install separate irrigation water meters.	Required by Code.
	Turf to be limited to active play and picnic areas only.	Required by Plan.
	Landscape areas shall conform to City of Chula Vista's Landscape Water Conservation Ordinance (CVMC 20.12)	Required by Code.
Waste Management	Replace 65% of new construction waste	Required by Code.
Landscape	All new parking lots shall provide shade trees that will achieve a 50% canopy cover of the parking stall areas five to fifteen years after the planting date for that tree (acknowledging the competing space requirements for utilities, site lines, accessibility or other parking lot design features) and providing light colored (cool) paving and or shade structures in those areas to meet the 50 % coverage required if the use of shade trees is limited due to the above mentioned reasons.	Required by City of Chula Vista.
	Street trees shall be appropriate to the space available for planting them, as determined by the City of Chula Vista Arborist, to encourage growth of a large canopy.	Required by City of Chula Vista.
	Landscape areas shall conform to the City of Chula Vista Landscape Water Conservation Ordinance (CVMC 20.12)	Required by Code.

6.1. California Sustainable Efforts

California has led the way when it comes to sustainability and is continually evolving its practices. Governor Brown Jr. issued an executive order (April 29, 2015) to increase its Greenhouse Gas (GHG) reduction target from 30 percent below 1990 levels by 2030 to 40 percent. This GHG target is the most aggressive benchmark enacted by any government in North America. California is on track to meet or exceed the current target of reducing GHG emissions to 1990 levels by 2020, as established in the California Global Warming Solutions Act of 2006 (Assembly Bill [AB] 32). California's new emission reduction target will make it possible to reach the ultimate goal of reducing emissions 80 percent under 1990 levels by 2050. This is in line with the scientifically established levels needed in the U.S. to limit global warming below two degrees Celsius—the warming threshold at which scientists say there will likely be major climate disruptions such as super droughts and rising sea levels.

These new GHG goals have led to the introduction of 13 legislative measures which will reduce GHGs, improve energy efficiency, and promote alternative energy and fuels sources. While this sustainability element will discuss short-term sustainability goals and potential requirements, the sustainability field is constantly changing and any requirement should be tied to current best practices at the time of development.

California also has a goal of making all new buildings zero-net-energy—essentially combining energy efficiency measures and renewable energy generation so that a building can produce as much energy as it uses annually—by 2020 for homes and 2030 for businesses. Both of these goals are within the time frame of the UI District development.

Governor Brown who declared a drought state of emergency in January 2014, issued an executive order (April 29, 2015) that required 25 percent statewide mandatory water reductions and a series of actions to help save water, increase enforcement to prevent wasteful water use, streamline the state's drought response and invest in new technologies that will make California more drought resilient. Additional California Green Building Standards Code (CALGreen) regulations were issued in December of 2015 which continued to reduce water use in new developments.

6.2. Regional Sustainable Efforts

SANDAG is required to develop a Sustainable Communities Strategy (SCS) in order to reduce GHG emissions from passenger vehicles consistent with targets set by the California Air Resources Board (CARB). SANDAG is using this strategy as it updates its Regional Comprehensive Plan (RCP), which provides a long-term strategic planning framework for the region based on "smart growth" and "sustainability."

The UI District Plan represents a forward thinking approach to addressing regional growth issues. New growth is accommodated in a mixed-use environment which reduces the reliance on the automobile, supports regional transit services, and fosters a sense of community and connectivity for its employees, students, and residents. Mixed use development in proximity to Village Town Centers and transit facilities is a more efficient use of land resources and the compact urban form reduces expenditures and maintenance costs for local and regional infrastructure and services. The UI District Plan embraces compact, efficient, and environmentally sensitive patterns of development that provide people with additional travel, learning, housing, and employment choices by focusing future growth close to existing and planned job centers and public facilities (Village 9 Town Center, the Millenia development, and the Otay Town Center).

6.3. City of Chula Vista Sustainable Efforts

6.3.1. GHG Efforts

Chula Vista has been a regional and national leader in climate action policies and programs designed to reduce GHG emissions. The City has participated in the United Nations Framework Convention on Climate Change, International Council of Local Environmental Initiatives (ICLEI), Cities for Climate Protection Campaign, and the Conference of Mayor's Climate Protection Agreement. In addition, the City adopted a CO2 Reduction Plan in 2000 and set a goal to reduce emissions 20 percent below 1990 emissions. The original plan was subsequently updated in 2008, 2010 and 2017. The Climate Action Plan acts as a roadmap for various policies and programs aiming to ultimately reduce Chula Vista's GHG emissions 30 percent below 2005 levels (recalibrated from the 1990 goal).

6.3.2. Smart Growth Principles

The City of Chula Vista has undertaken planning efforts to implement Smart Growth principles through its adopted General Plan and the GDP. Otay Ranch is a balanced community with commercial and residential uses as well as open space and a series of connected trails and paseos to promote walking throughout.

6.3.3. Energy Conservation

The Otay Ranch GDP includes goals, objectives, and policies that provide for an increase in energy conservation and reduction of energy consumption. The GDP requires the preparation of a Non-Renewable Energy Conservation Plan (Appendix C) to identify feasible methods to reduce the consumption of nonrenewable energy resources, including transportation, building design and use, lighting, recycling, alternative energy sources, and land use. Fossil fuels, which are non-renewable energy sources, provide the majority of energy utilized in the San Diego region. These fuels are directly consumed in the form of gasoline, diesel fuel, and natural gas, and indirectly as electricity generated from these fuels.

6.3.4. Air Quality Improvements

As required by the City of Chula Vista Growth Management Program, an AQIP (Appendix B), was prepared that lists the numerous features and requirements of the UI District to minimize air quality impacts from construction and operation of the UI District development. The most significant air quality improvement measures are those policies and regulations established at the broadest geographic level, i.e., State and Federal. However, project-level features or actions, although small and relatively insignificant, contribute to cumulative conditions and affect regional air quality. The CO2 Index model assessed the project design features which are intended to reduce vehicle trips, maintain or improve traffic flow, reduce vehicle miles traveled, and otherwise reduce emissions (direct or indirect) from the project. Because the land use mix and project design features which meet the AQIP requirements are intrinsic to the project, no specific implementation measures are required. The project only need be developed as envisioned in the SPA Plan.

The City has also adopted a shade tree policy to the heat island effect for all parking lots and streets. All new parking lots shall provide shade trees that will achieve a 50% canopy cover of the parking stall areas five to fifteen years after the planting date for that tree (acknowledging the competing space requirements for utilities, site lines, accessibility or other parking lot design features) and providing light colored (cool) paving and or shade structures in those areas to meet the 50 % coverage required if the use of shade trees is limited due to the above mentioned reasons. The UI District parking lots and streets will be consistent with the City' policy.

6.3.5. Building Standards

The City has adopted an ordinance CVMC § 15.12.005 that allows the Building Official to require the applicant to retain the services of a consultant having expertise in Green Building and/or energy efficiency techniques to review and evaluate complex systems and/or alternate methods or materials of construction and provide recommendations as to compliance with the requirements of this code. The cost of such consultant shall be paid by the applicant.

6.3.6. Healthy Chula Vista

The Healthy Chula Vista (HCV) Initiative supports the City's Strategic Plan goal of creating a thriving, healthy community by creating policies and programs to improve the City's physical and social environments, promote awareness and access to services, and build community partnerships.

Chula Vista's first HCV Action Plan serves to:

- Outline current City programs and policies that support community wellness.
- Identify opportunities for the City to better facilitate a healthy community (i.e. a "gap" analysis).
- Develop a set of specific, actionable strategies that the City can pursue to expand its programs, policies, and services to support the mental, physical, and social well-being of its community.
- Summarize available tools, resources, and community partnerships that can be leveraged to improve the effectiveness of the HCV Initiative.

The Plan formally outlines the goals and strategies that the City desires to engage the community and accomplish in seven key focus areas:

- Engagement
- Environmental quality
- Health care & prevention
- Healthy food access
- Land use
- Transportation
- Physical activity

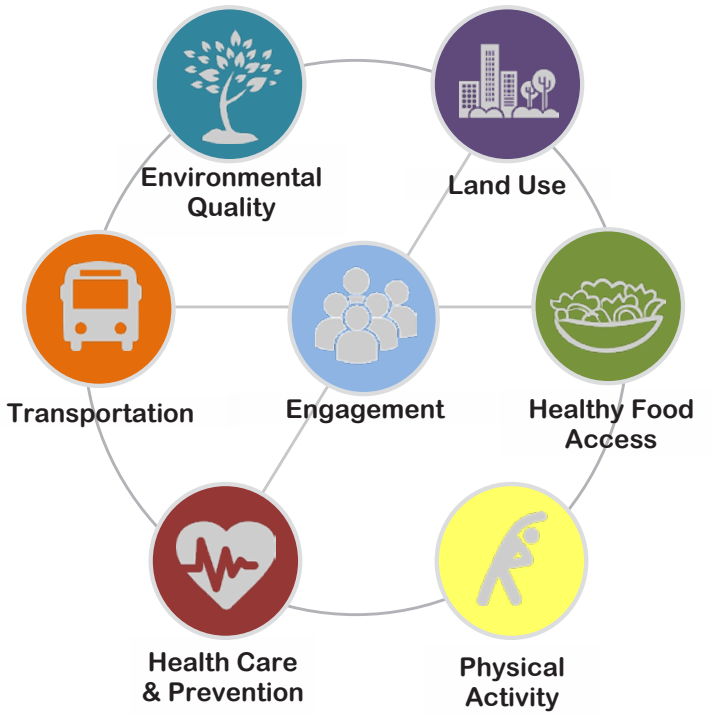


Figure 6A: Healthy Chula Vista

6.4. Survey of Third Party Certifications

There are a number of third-party organizations which have developed green building or green management programs and/or certifications for universities described in this section.

6.4.1. U.S. Green Building Council (USGBC)

USGBC has formed the Center for Green Schools to implement their vision for green schools for everyone within this generation. The Center for Green Schools has developed a *Roadmap to a Green Campus* to provide strategies for using LEED as a framework for developing and evolving campus-wide sustainability plans. According to the *Roadmap to a Green Campus* "the success of a green campus is dependent on an integrated approach to planning and implementing sustainability initiatives." The Center of Green Schools promotes a collaborative approach with other campus organizations as well as shares best practices.

For more information: www.centerforgreenschools.org

6.4.2. American College and University Presidents' Climate Commitment (ACUPCC)

The ACUPCC provides a framework for colleges and universities to become climate neutral and advance education for sustainability. The ACUPCC recognizes the unique responsibility that institutions of higher education have as role models for their communities and in training the individuals who will develop the social, economic and technological solutions to reverse global warming. College and university presidents make the following institutional commitments by signing the ACUPCC:

1. To eliminate operational GHG emissions,
2. To provide the education, research, and community engagement to enable the rest of society to do the same, and;
3. To publicly report progress on an annual basis.

The ACUPCC has created an *Implementation Guide* to help institutions plan for climate neutrality, create programs to advance sustainability on campus, and submit reports demonstrating compliance with the commitment. Since its launch five years ago, the ACUPC has helped transition the sustainability movement in higher education from a series of isolated projects to a cohesive network of shared best practices, successful solutions, and deep investment in sustainability education for all students. Since 2006, the ACUPCC has grown from 12 founding presidents to a network of 665 institutions.

For more information: www.presidentsclimatecommitment.org

6.4.3. Association for the Advancement of Sustainability in Higher Education (AASHE)

AASHE has developed a Sustainability Tracking, Assessment & Rating System (STARS) to be a transparent, self-reporting framework for colleges and universities to measure their sustainability performance. STARS participants pursue credits and may earn points in order to achieve a Bronze, Silver, Gold or Platinum rating, or recognition as a STARS Reporter. The credits included in STARS span the breadth of higher education sustainability and include performance indicators and criteria organized into four categories: Academics, Engagement, Operations, and Planning & Administration. STARS reports and ratings are valid for up to three years and are publicly accessible on the STARS website.

For more information: www.aashe.org

6.4.4. Labs21 Environmental Performance Criteria (EPC)

The Labs21 is a rating system for use by laboratory building stakeholders to assess the environmental performance of laboratory facilities. The EPC leverages and builds on the U.S. Green Building Council's LEED™ Rating System, extending it to set appropriate and specific requirements for laboratories.

The EPC is a public domain document that is available for anyone to use as they see fit. Labs21 does not provide a project certification process for the EPC. However, many of the EPC credits may be pursued as innovation points under LEED-NC.

For more information: http://labs21.lbl.gov/EPC/intro.htm

6.5. Survey of California University Sustainable Practices

6.5.1. Stanford University

Stanford's Energy and Climate Plan (revised February 2013), will reduce campus GHG emissions by 50% and potable water use by 18%, while also opening a path to full energy sustainability over time through greening the campus electricity supply. Serving as a blueprint for implementation, the Plan demonstrates long-term cost effectiveness and sustainable natural resource use; guides development of critical campus infrastructure; and reduces economic and regulatory risks to Stanford's long-term energy supply. It provides a vision for the energy future of the campus while maintaining flexibility through a comprehensive, long-term approach to the challenge of reducing campus emissions. See below for key elements of the Plan.

A. Stanford Energy System Innovations (SESI)

SESI combines the best of existing heating and cooling technologies of Europe and North America, merged together for the first time ever in the United States. This first-of-its-kind system, differentiated by the combination of technologies employed and the scale of their usage, is designed to meet the University's energy needs through 2050. SESI is designed to take advantage of Northern California's temperate climate. As with most modern large commercial facilities, university buildings are being cooled and heated at the same time throughout the year to supply different room-temperature requirements. In other words, the cooling process can be seen as a collection of unwanted heat. Some modern facilities take advantage of this heat overlap on a stand-alone building basis. SESI, however, takes this approach to an entirely new scale, encompassing a 15-million-square-foot campus with a population of more than 30,000.

"SESI adeptly develops for the first time a highly efficient large scale district energy system based on electricity powered (full path to sustainability) combined heat and cooling rather than fossil fuel fired (questionable path to sustainability) combined heat and power, achieving gas high heating value (HHV) trigeneration efficiency greater than 100% due to the large amount of waste heat recovery. SESI utilizes both large scale hot water and cold water thermal energy storage."

B. High-Performance New Building Design

Mandatory efficiency standards for new buildings which must use 30% less energy than required by code and 25% less potable water than comparable buildings.

C. Photovoltaic (PV) Power

Stanford has completed the conceptual design of a 5.8-megawatt on-campus PV power generation system with solar panels on over a dozen major buildings and the largest parking garage on campus. SunPower, a leading global provider of solar technology solutions, has been selected to install the rooftop solar systems on campus.

Stanford has also entered into an agreement with SunPower to build a 68-megawatt solar plant on approximately 300 acres in California. The solar farm, called the Stanford Solar Generating Station, will be comprised of more than 150,000 high-efficiency SunPower solar panels expected to come on line in late 2016. Together, the Stanford Solar plant and the on-campus PV systems will provide about 53 percent of Stanford's total electricity use.

6.5.2. University of California

University of California's sustainability program covers all ten campuses and five medical centers. The 2004 comprehensive policy established the University as a leader in promoting environmental stewardship. The policy has been revised several times, most recently in September 2013, and was expanded to cover the areas of sustainable transportation, climate protection practices, building renovations, sustainable operations and maintenance, waste reduction, environmentally preferable purchasing, sustainable food service, and sustainable water systems. Applicable policies for new construction include the following:

A. New Building Policies:

- Be designed, constructed and commissioned to outperform the CBC energy-efficiency standards by 20% and strive to outperform the standards by 30%.
- Achieve a USGBC LEED Silver certification and meet the prerequisites of the Labs 21 EPC.
- Achieve 2 points within LEED-NC Water Efficiency category.

B. Clean Energy Policies:

- Reduce non-renewable energy consumption.
- Provide up to 10 megawatts of on-site renewable power.

C. Recycling and Waste Management:

- Zero waste goal by 2020.

6.5.3. California State University Sustainability Policy

California State University sustainability program covers all 23 campuses. The Board of Trustees has established energy conservation and sustainable policies since 1978. In May of 2014, the Board has adopted broader policies to reduce the University's impact on the environment and incorporated sustainable principles and climate science in its education offerings. Applicable policies for new construction include the following:

A. New Building Policies:

- Achieve a USGBC LEED Silver.
- Reduce water consumption by 20% by 2020.

B. Recycling and Waste Management:

- Reduce solid waste by 80%.

6.6. UI District Sustainable Initiatives

6.6.1. Site Planning

The UI District leverages the Otay Ranch location to provide the highest intensities of land use in the Otay Ranch limiting the pressure for sprawl in the area. The project has been designed to encourage alternative modes of transportation and will maximize the financial commitments made to transit at the federal, state, and local level by integrating transit centrally into its design.

Separation of work and home life has been a dominant theme in urban development for generations. As a result, long distance commutes between suburban residential tracts and distant work centers have become a common lifestyle for many. The need and desire to provide alternatives is apparent in the high cost of commuting in terms of time and dollars for the individual, but also the air quality, congestion, and high infrastructure cost for the entire community. The UI District and development in the adjacent Villages will provide opportunities for living, learning, and working close together.

The UI District allows for a single, large institution in the traditional model of a major university or an aggregation of smaller institutions nested together in the Oxford model. Major facilities such as a main library, student lounge, health care, athletic facilities and sports fields, and dormitories and student services would be available to all colleges within the District. Individual institutions could provide classrooms, faculty offices, and special facilities, such as libraries and laboratories to meet the needs of their particular academic focus. This flexible approach to developing higher learning institutions reflects not only economic challenges to academia at all levels, but also the opportunities for integrating diverse, formerly segregated areas of study into more collaborative, productive study programs, and the efficient leveraging of funds for common amenities. The District design incorporates the natural features of the site, emphasizing the natural beauty and the views across the valley and the integration of an efficient grid system. Sustainable design is a hallmark of the Plan and the building requirements. There will be extensive walking paths and climate responsible landscaping. The design promotes connections within the community by utilizing a shared infrastructure (i.e. roadway system; parking system; and a mixed-use business district).

6.6.2. Mobility

Arguably, one of the greatest opportunities for significant conservation of energy produced by fossil fuels is transportation related. The UI District maximizes these opportunities for conservation by implementing a land use plan which concentrates intensity around new transit facilities, provides for regional and local transit service into the project area, and encourages alternative transportation modes such as walking, bicycles, and Neighborhood Electric Vehicles (NEVs).

A. Multi-Modal Planning Principles

UI District's fundamental principles for parking and transportation are:

- Parking facilities and district-wide transportation programs and services shall be planned, sited, established and managed on a district-wide basis as shared campus infrastructure, in order to ensure efficient sharing, minimize vehicle trips and parking demand, and allow excellence in urban design.
    - A Parking and Transportation Department, similar to the Parking and Transportation Departments established at all University of California campuses and many private institutions, shall be established to plan, oversee and manage a comprehensive parking and transportation system for the UI District.
    - Parking shall be provided as a user fee-based service. The costs of land, capital, operating and maintenance expenses related to the parking system shall be recovered from the users of the parking system. The Parking and Transportation Department may include in the parking system's costs other access costs related to vehicle operation on campus, costs of projects that mitigate the adverse impact of parked vehicles, and costs of programs that may reasonably be expected to reduce the demand for parking on campus.
    - There shall be no minimum parking requirements within the UI District. Instead, academic, non-profit and private-sector employers, employees, residents, customers and visitors will meet their parking needs by renting or leasing spaces in the District's shared lots, on a monthly, daily and/or hourly basis. On a case-by-case basis, the Parking and Transportation Department may make exceptions to this general principle: for example, parking intended solely for private residential use at a development might be established by a private partner, and not included in the overall shared parking system.

  - Curb adjacent parking in adjacent Villages shall be protected from spillover parking from the UI District by actively managing curb parking, as necessary and appropriate, using tools such as parking pricing, time limits, residential parking permit districts and/or parking benefit districts.

- Thoroughfares shall be designed as Complete Streets that consider all modes of travel including automobiles, bicycles, pedestrians, transit, LSVs, and alternative vehicles.
  - The thoroughfare network shall provide multiple connections and routes to evenly distribute traffic and reduce the need for large volume roadways, create slow speed streets that are safer for all, and shorten distances between destinations.
  - On transit routes, priority should be given to ensuring the speed and reliability of transit vehicles (e.g., via mechanisms such as transit signal priority, queue jump lanes, or dedicated transit lanes).
  - The trail network shall include Village Pathways, Regional Trails, and other multi-use trails that connect to the Chula Vista Greenbelt Master Plan and the OVRP as identified in the GDP.

B. Transit

Public transit has been integrally woven into the fabric of the community. Transit stops have been integrated into the District so that almost two-thirds of the UI District development will be within a half mile of transit facilities. In addition to the centrally located services, the higher residential densities adjacent to the UI District together with the strong employment component will directly support and enhance transit viability.

The 2050 RTP includes the South Bay Rapid Project, a $113 million bus rapid transit route which will provide the UI District with frequent and reliable transit service. The 26-mile Rapid route will run between the Otay Mesa Port of Entry and Downtown San Diego via eastern Chula Vista. Service is expected to begin in 2018 and will be operated by the MTS. The estimated travel time between Otay Ranch and Downtown San Diego will be approximately 50 to 60 minutes during peak commuting hours.[1]

1 For additional information, see: http://www.sandag.org/uploads/publicationid/publicationid_1442_9903.pdf, and http://www.sdforward.com/pdfs/RP_final/Chapter2-AStrategyforSustainability.pdf. Accessed January 13, 2017.

1. BRT

Bus Rapid Transport is the highest level of transit service being considered for the Otay Ranch area. BRT is designed to provide longer distance, higher speed, regional trips along high capacity corridors such as arterial roads and freeways. Standard all stop service may be supplemented with express service during peak commute hours to provide direct non-stop service between major residential, employment, and activity centers. BRT combines a series of transit-only lanes with mixed flow lanes that are shared with normal auto traffic. In mixed flow conditions, BRT vehicles typically receive priority at signalized intersections. BRT systems include high-quality, rubber-tired, low floor buses that offer speed, comfort, and amenities with the flexibility of a non-fixed track. Stops are typically spaced 0.5-1 mile apart along arterials and 4-5 miles apart along highways. BRT has a ridership capacity of 50-80 seated plus standees. Right-of-way has been reserved on portions of East Palomar Street, Main Street, Otay Valley Road, and Orion Avenue for planned BRT service.

2. Rapid Bus

Rapid Bus provides a service level option between BRT and High-Frequency Local Bus service. Rapid Bus also provides higher speed service (averaging 25 mph) along high volume arterial corridors. Rapid Bus combines short segments of transit-only lanes with mixed flow lanes that are shared with normal auto traffic. In mixed flow conditions, rapid bus vehicles typically receive priority at signalized intersections. Rapid Bus can be upgraded to BRT over time as warranted. Rapid Bus includes high-quality, rubber-tired, low floor buses that offer speed, comfort, and amenities with the flexibility of a non-fixed track. Stops are typically spaced 0.5-1 mile apart. Rapid Bus has a ridership capacity of 40 seated plus standees. Planned Rapid Bus service could be accommodated on Hunte Parkway, Otay Valley Road, and Orion Avenue.

3. High-Frequency Local Bus

High-Frequency Local Bus provides mid-to-short distance trips between key local activity centers and neighborhoods. Buses typically consist of standard and single articulated buses with low floor design. High-Frequency Local Bus integrates with normal auto traffic. Buses travel at speeds up to the posted limit of the streets they operate on; however, due to the frequent stops, the average speed is approximately 12 mph. Stops are spaced approximately a quarter mile apart. Typical passenger capacity is 37-57 seated plus standees.

C. Walkability

The UI District's design provides educational, community, office/industrial and residential uses and amenities in close and walkable proximity. As previously stated the regional transit stops are located within a half mile walking distance of two-thirds of the UI District development. Streets and sidewalks will be pedestrian-oriented, properly illuminated and will provide connections to the open space network and to adjoining Villages. Roads will be designed to minimum widths to calm traffic and encourage walkability.

The UI District has been planned with a fine-grained grid system of streets, resulting in a very walkable community. The sidewalks range in width from 5-14 feet and will be amenitized to provide an inviting pedestrian experience. Block sizes are approximately 350 to 450 feet in length providing for short, walkable Districts. Public realm walkways, trails, and paseos have been provided throughout the UI District connecting to the District's sidewalks, parks and plazas to create a complete pedestrian network that will serve the community.

Reducing street widths can reduce urban heat island effects and consequently energy demand for air conditioning. In addition to reduced street pavement width, the inclusion of street trees which shade the pavement will reduce temperatures by providing tree canopies, helping to absorb CO2 emissions while improving air quality. The UI District streets have reduced widths, consistent with the standards of the Otay Ranch GDP, compared to typical suburban development patterns.

D. Bicycle Transportation

Bicycling will also be encouraged within the project. Bike routes provided on the UI District streets will connect to the City's regional trail system to provide bicycle commuting and recreational use opportunities. Bicycle racks will be distributed throughout the UI District area, while shower and bicycle storage facilities at employment centers will be provided per CALGreen requirements.

E. Fleet Management

While gasoline consumption has been declining since 2008, it is still by the far the dominant fuel. Petroleum comprises about 92 percent of all transportation energy use, excluding fuel consumed for aviation and most marine vessels. For 2013, combined alternative fuel use in California was slightly more than seven percent of total transportation fuel use.

1. Campus Vehicles

The UI District campus user(s) will be expected to have a transportation and maintenance fleet comprised mainly of alternate fuel vehicles. This will significantly reduce the emissions produced in vehicular travel and campus operations. The campus should also consider a program where their used cooking oil is converted into bio-diesel fuel for use within their own fleet. Alternative-fuel or electric car charging stations for personal vehicles may also be installed where appropriate.

2. Plug-In Electric Vehicles (PEVs)

According to the Integrated Energy Policy Report 2014 (IEPR) Update Adopted Forecast, the use of PEVs are increasing. Currently there are 20 different models of PEVs. In 2014, PEV sales were triple 2012 sales. As of December 2014, more than 118,000 PEVs were sold in California. CALGreen now requires new construction to be ready to provide electric vehicle supply equipment (EVSE) for PEV charging with raceways to accommodate a charging station (208/240-volt branch circuit and service panel with capacity to install a 40 ampere branch circuit). EVSEs allow vehicles to fully recharge in 4-8 hours.

Workplace and Dorm Charging

Charging a PEV without access to an individual garage is one of the biggest barriers to increased PEV adoption. It is also important to use time-of-use utility rates to promote use at lower off-peak times. The cost of installation, which varies from $1500 to $30,000 and cost of equipment ranging from $3,000 to 4,000. Who pays for the charging is another important consideration.

3. NEVs

Within the UI District, NEVs would be expected to share streets with other vehicles due to the low speeds on internal streets. At this time, the viability of NEVs use is unknown since it depends on market, price, consumer acceptance ,and access to adjacent activity centers/destinations.

6.6.3. Building Design

Progress toward reduced energy goals, starts with energy conservation. With that in mind, building designs will minimize energy demand through thermal efficiency, daylighting, and passive heating/cooling. District heating and cooling will improve system efficiencies, and large-scale implementation of energy-saving measures such as solar hot water (especially in the dorms) and heat recovery ventilation systems (especially in buildings such as science labs) should be investigated and implemented where feasible in order to reduce energy demand.

The careful selection and design of appliances, building systems, and architectural and site design features will all help to reduce the energy demands of the UI District development. See below for energy conservation features for building construction.

A. Improved Building Construction Standards

The Energy Commission is required by law to adopt standards every three years that are cost effective over the 30-year lifespan of a building. The standards are updated to consider and incorporate new energy efficient technologies and construction methods. The standards save energy, increase electricity supply reliability, increase indoor comfort, avoid the need to construct new power plants and help preserve the environment.

The 2016 Building Energy Efficiency Standards were effective as of January 1, 2017. A single family home that meets the 2016 standards could see 28% more energy savings in regulated loads than those built under the 2013 Energy Standards. The UI District will be a net-zero community.

1. Commercial Lighting

Indoor lighting is one of the single largest consumers of energy (kilowatt-hours) in a commercial building, representing about a third of electricity use. By encouraging commercial builders to include energy efficient lighting, a reduction in commercial electrical demand could be expected.

2. Energy Efficient Appliances

All development in the UI District will be equipped with new appliances which are significantly more energy efficient than earlier models. Energy Star appliances will be encouraged. New construction in the UI District will require significantly less energy than those in older areas of the region due to increased building and appliance energy efficiency.

3. Energy Management

Sustainable architectural and site design will help to reduce the project's overall energy use. The site's solar exposure provides a unique opportunity to passively light indoor spaces through the liberal use of window glazing along the southern facades of buildings. Shading of east and west windows can reduce solar heat gain. To reduce heating, ventilation, and air condition (HVAC) use for heating and cooling of structures, buildings could be oriented to harness the prevailing winds to naturally ventilate indoor spaces. Also, careful selection of vertical landscape elements such as trees, large shrubs and climbing vines will be encouraged to shade southern and western building facades to reduce heating in summer and increase solar heat gain in winter months.

6.6.4. Energy Generation

On-site generation of energy will come primarily from PVs. Large-scale generation of power from solar, a district co-generation energy system (like the Stanford model), biomass, and methane cogeneration will be investigated, as will other partnerships with regional utilities interested in developing renewable energy.

6.6.5. Public Area Lighting

Lighting for public areas such as streets, parks and other public spaces will utilize energy efficient fixtures, consistent with City standards and requirements.

6.6.6. Water Conservation

Water conservation will be integral to the design of the campus. Green roofs, cisterns, grey-water systems, and efficient fixtures will be investigated and implemented where feasible in order to maximize the use of all water on-site. The on-site management of storm water through the use of minimal impact, pervious parking, roads and walkways in combination with green roofs and planted swales will ensure the hydrology of the site remains in balance as the campus grows.

As detailed in this Water Conservation Plan (Appendix G), numerous features have been included in the SPA to minimize the use of water during the construction and use of development within the UI District. Many water conservation measures are mandated by state or federal law. CALGreen requires the use of certain plumbing devices that meet specified maximum flow rates. These devices include:

- Water closets
- Urinals
- Showerheads
- Faucets
- Wash fountains

The Otay Water District (OWD) requires the following fixtures to be high-efficiency:

- Clothes washers
- Dishwashers

The following additional measure will be required in the UI District:

Pressure Reducing Valves

Installation of a pressure-reducing valve at the water service connection can maintain the pressure below 60 psi, reducing the volume of leakage that may be present and prevent excessive flow of water from all appliances and fixtures.

A. Recycled Water

The OWD provides recycled water to the project area. The OWD owns and operates the Ralph W. Chapman Water Recycling Facility. This plant has a stated capacity of 1.1 million gallons of recycled water per day for non-potable water uses. In addition, in the fall of 2003, the District signed an agreement with the City of San Diego for the right to purchase up to 6 MGD of recycled water from the City's South Bay Water Reclamation Plant, located in San Ysidro. The District also acquired the right to purchase supply from the SBWRP that exceeds 6 MGD, if San Diego has available supply. In 2006, the District completed construction of the transmission system facilities and began taking delivery of the recycled water produced at the SBWRP.

Ultimately, recycled water is expected to represent 11 to 15 percent of the District's total water supply. As referenced in § 26.04 of the District's Code of Ordinances, recycled water uses may include but are not limited to the irrigation of greenbelt and appropriate industrial and commercial uses.

Recycled water requirements for the project will be coordinated by the OWD and the City of Chula Vista. The phased construction of potable and recycled water facilities, based on the District-approved master plans, will be incorporated into the UI District Public Facilities Financing Plan and/or subdivision map conditions for the project to assure timely provision of required facilities.

Use of recycled water does not reduce the irrigation demand for landscaping but more efficiently uses available water supplies by using potable water indoors and using recycled water for outdoor irrigation.

6.6.7. Construction Waste Reduction, Disposal & Recycling

CVMC requires recycling or diversion of 100% of inert debris—such as concrete, brick, soil, rock—and a minimum of 65 percent of all other nonhazardous construction and demolition debris.

Each project is required to submit a Waste Management Report (WMR) form stating what types of materials they will be recycling and submit a performance deposit. Upon completion of the project, each project will resubmit their WMR and copies of receipts demonstrating how they achieved their recycling goals. Upon review of the WMR, if the goals are met, the deposit will be refunded. If the goals are not met, the deposit will be prorated by the amount disposed and kept by the City for non-compliance. If there is a significant volume of a particular material type for which there is no market, the recycling requirements may be amended, with prior consultation with City staff.

The waste stream leaving the site will be managed through the development of recycling, composting and material re-use programs. To reduce the demand for raw materials required for building construction, the use of recycled-content, salvaged, refurbished, reusable, durable and rapidly-renewable materials will be encouraged for building and landscape construction.

6.6.8. Non-Residential & Residential Recycling

CVMC § 8.23-25 requires all commercial and industrial establishments that recycle with a third party recycler to submit recycling tonnage documentation on an annual basis to the City's conservation coordinator, due on or before January 31st, for the previous year. This requirement promotes recycling of materials. Third party recycling can only occur when the materials are being sold and there is no charge for collection or hauling. If there is a collection or hauling charge, the City's franchised hauler is to provide the service. Those establishments recycling with a franchised hauler do not need to report because the hauler does the reporting to the City.

The City of Chula Vista's Recycling and Solid Waste Planning Manual, adopted by City Council, provides information for adequate space allocated to recycling and solid waste within individual projects, based upon the type of project and collection service needed. The enclosures must be large enough to house all collection services containers including trash, recycling materials, yard waste or organic materials, and any other ancillary service, such as grease rendering

Additionally, the City of Chula Vista encourages the use of compost materials to be incorporated into the soil of all new construction projects to improve soil health, water retention, less water run-off, and filtration of water run-off prior to entering storm drains and creeks on the way to San Diego Bay. The yard trimmings collected in Chula Vista are composted at the Otay Landfill and may be available for purchase.

6.6.9. Landscape Requirements

The use of turf will only be allowed for play, and picnic athletic areas. Reclaimed water will be used for outdoor landscape areas on the Main Campus Property. All outdoor water use shall comply with applicable CALGreen requirements.

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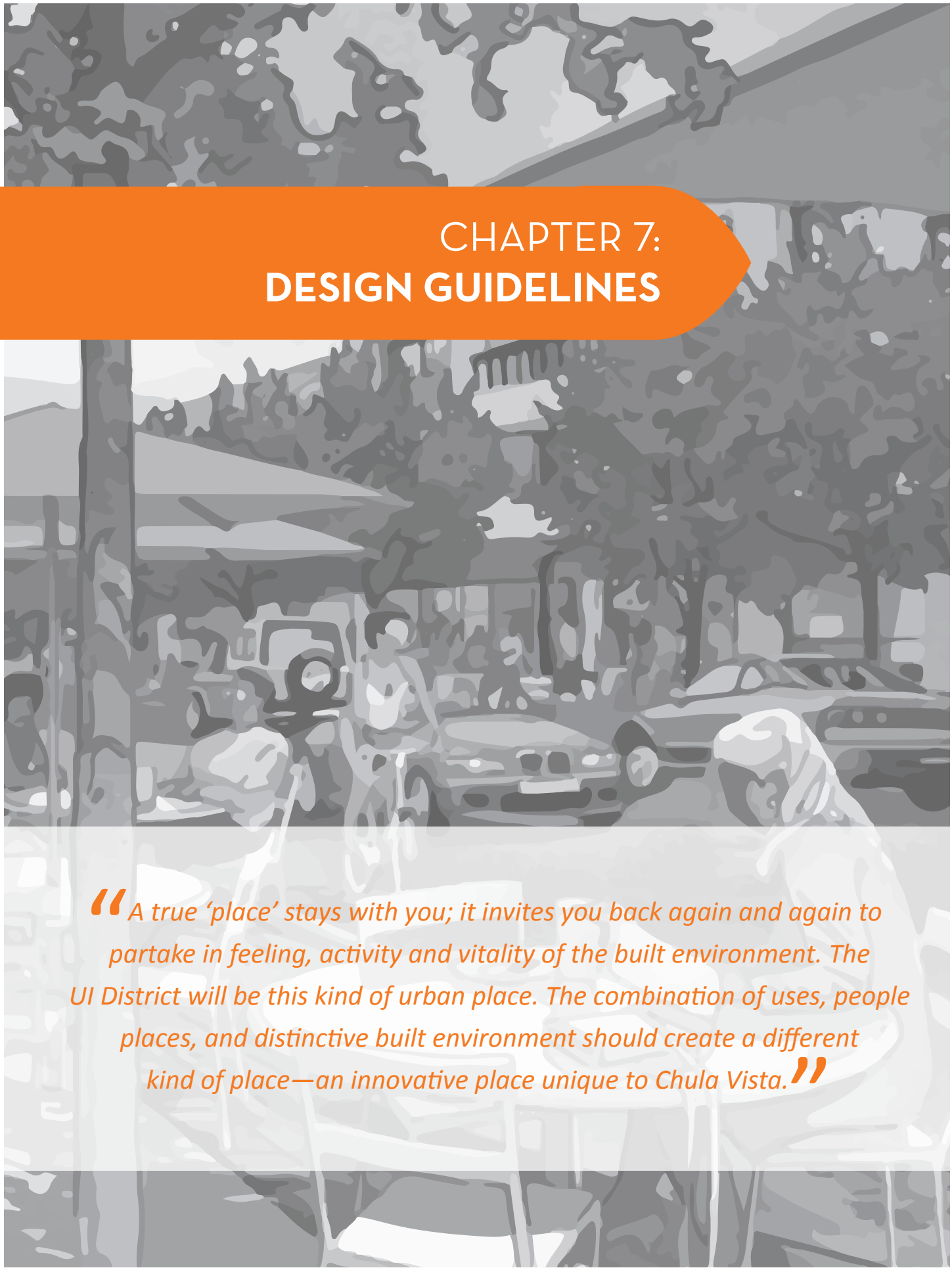


CHAPTER 7:
DESIGN GUIDELINES

"A true 'place' stays with you; it invites you back again and again to partake in feeling, activity and vitality of the built environment. The UI District will be this kind of urban place. The combination of uses, people places, and distinctive built environment should create a different kind of place—an innovative place unique to Chula Vista."

7.1. Purpose & Intent

Because academic environments are generally defined by exceptional facilities with unique character, materials and open spaces, architecture, planning and landscape design play a significant role in the UI District Plan. Going forward, the buildings and spaces in the UI District should strive to advance environmental aesthetics, high-performance engineering and sustainability—and reflect the local San Diego landscape and climate in authentic and thoughtful ways. These design guidelines will address important design considerations for achieving a vibrant "place," defined by a pedestrian and human-scaled built environment that serves a diverse and dynamic community of students and innovators.

The following design guidelines are not meant to be overly restrictive, but rather to establish design fundamentals that can be applied creatively over a wide range of design solutions. Each guideline shall be considered within the context of the building and its adjacencies. These guidelines are intended to be flexible and to allow for great adaptability to market changes.

Source: iStock

7.2. Identity Concept

7.2.1. UI District Identity

The UI District is conceived as a compact, walkable urban district that balances a unified scale and character with latitude for a variety of architectural styles and expressions. Its overarching vision reflects an authentic urban community that will grow over time to encompass a multiplicity of identities, in much the same way all cities do. Given how the UI District Identity is more urban than a traditional campus, these guidelines will differ from and be more inclusive than those written for a more historic university precinct. However, like most classic campus environments, well-defined open spaces and iconic placemaking will be overriding features.

Source: iStock

7.2.2. Multi-Institutional Character

Unlike a single, traditional campus precinct, the UI District will encompass several university partners who will grow over time within different footprints. Given the changing nature of academic users and the long-range time-frame of the UI District, flexibility will be a key. The UI District Plan is flexible enough to reflect a wide range of academic planning scenarios—anything from academic spaces located in mixed-use multi-tenant buildings to larger ensembles of several buildings organized around a public space framework.

7.2.3. Streetscapes

Given the Plan's urban vision and character, streetscapes play a particularly significant role in the UI District. As outlined in Chapter 4: Circulation Plan, a highly articulated network of complete streets will anchor key places and circulation corridors throughout the UI District. All of these streetscapes reflect best-practice in the social and ecological role of streets in community planning—with significant, well-defined pedestrian and bike zones, unique lighting and street furniture, and sustainable landscape features including shade trees, climate appropriate plantings, storm water swales, and public art. Wherever possible, academic- innovation and/or retail spaces will anchor these streetscapes in urban zones, while landscapes and trails will do so wherever adjacent to parks, canyons, and squares.

7.2.4. Campus Entries

In order to create a unified, urban district, the UI District Plan avoids design strategies that physically or visually separate UI District facilities from their surroundings. These include gates, walls, freestanding signage features and deep setbacks—planning strategies that stress potential disconnects of university functions from their immediate neighborhood context.

Source: WHA

Source: WHA

University of California, Irvine

7.2.5. Signs

Signs and graphics will play a large role in creating and reinforcing the desired feel of the UI District. These guidelines establish a coordinated exterior signage program to achieve a unified and cohesive overall appearance. Controlled way-finding and identity signage is a major factor in creating and preserving the design character of the District.

The signage design should have a distinctive character that reflects the mixed-use, urban environment.

A. General Guidelines

- Selected sign colors and materials should contribute to legibility and design integrity.
- The design of the sign should be appropriate to the design of the building that it is placed on.
- All garage parking areas shall be identified.
- Signs should be clearly legible for universal accessibility. They should meet or exceed ADA standards for type size, type style, color contrast, messaging, and heights.
- Signs should use a brief message. A sign with a succinct message is simpler, faster to read, looks cleaner, and is more attractive.
- Typefaces used on identity signs should be easy-to-read fonts. Consideration must be given to colors and materials of the surrounding support walls.
- Sign conduits, transformers, junction boxes, etc. must be concealed from view.
- Construct signs of permanent, durable, and fade-resistant materials.

Source: WHA

Pylon Sign Example


Wall Sign Example

Projecting Sign Example

B. Pylon and Monument Sign Guidelines

- Pylon signs should be designed with two (2) supports to house the sign area in a decorative frame. For signs where it is not possible to provide a frame proportional to the sign, a single support may be provided as long as the support is proportional to the sign face in size and shape.
- Monument signs should be designed with the width of the base of the sign equal to or more than the width of the sign face.

Monument Sign Example

C. Wall and Projecting Sign Guidelines

- Locate signs as close to the building entrance as possible, where feasible.
- Wall signs shall consist of individual letters and be attached to a building without visible supports or raceways.
- Exposed neon is permitted for themed restaurants and other entertainment uses.
- Wall mounted internally illuminated permanent box signs and banners used as permanent signs are prohibited. Internally illuminated box signs may be used as projecting signs.
- Projecting signs shall have a minimum vertical clearance of eight (8) feet.
- Projecting signs shall be placed perpendicular to the building wall.
- Projecting signs shall be attached-to the building fascia or canopy with attractive and decorative supports.
- Encourage use of a consistent color scheme on all exterior signs that is compatible with all other signs on a building and free-standing signs on a parcel.

D. Changeable Signage

The purpose of changeable signage is to create excitement and provide a visually-interesting streetscene. Three styles of this signage may be used to achieve this goal are “pageantry,” “mural graphics,” and “marquee signs.”

Pageantry

Pageantry includes flags, banners, cylinder kiosks, canopies, lights, directories, ground-mounted graphics, flower pots or other similar, temporary or permanent (but changeable) elements. The intent is to allow regular changes to the pageantry elements in terms of color, design and other visual content so the pageantry signage will always look current. Pageantry may be located within the right-of-way, within setbacks, or on private property. Pageantry could be used to feature on-site tenants or programming, or for off-site advertising and sponsorship opportunities.

- Paper, cardboard, styrofoam, stickers, and decals are not acceptable forms of pageantry (directories and kiosks excepted).
- Pageantry shall not include flashing, flickering, rotating, or moving lights.
- Temporary Promotional Advertising (banners) is not considered to be pageantry.
- Kiosks and directories should provide vertical breaks in the sign structure. Individual panels shall be recessed, framed, or otherwise treated to avoid a flat appearance of the sign face.

Pageantry Example - Kiosk

Pageantry Example - Directory

Pageantry Example - Canopies

Pageantry Example - Lights & Umbrellas

Mural Graphics

Mural graphics are intended to provide interest within the interior of the UI District. These graphics may include applied, vinyl, painted or printed graphics, electronic LED board, or tilework. These mural graphics blur the boundaries between advertising and public art. Some of the locations may feature public murals and art, while others will provide off-site advertising and sponsorship opportunities. These mural graphics will create an eclectic urban environment that also promotes change and evolution over time.

- The mural graphics, advertising and art pieces are encouraged to be placed at locations that will reduce the scale of large blank walls.
- Lighting of a mural graphic shall not spill over to an adjacent property or public street.
- The mural graphic shall be maintained in good condition.

Marquee Signs

Marquee signs are typically used to provide information about current showings or events for theaters, ticket outlets and live entertainment uses.

- Marquee signs may project or be integrated into the building to promote enhanced articulation.
- Plain, rectangular marquee signs without any articulation are discouraged.
- Marquee signs may be manual or electronic.

Mural Graphic Examples

E. Directional Signage

The purpose of directional signage is to facilitate the flow of traffic and pedestrians. Parking entry signs notate the entrance of parking structures while directional signs may direct vehicles or pedestrians to a particular destination.

Parking Entry Signs

- Parking entry signs should be illuminated signs so drivers can easily identify the entrance to parking areas.
- These signs shall be located on all non-residential parking garage entrances.

Directional Signs and Wayfinding Program

- Directional signs typically include individual tenant or place names and directional arrows.
- A wayfinding program detailed with the placement and location of directional signs shall be developed.
- To avoid confusion, directional signs will typically have no more than six (6) listings with arrows.
- The project name may be located on the sign in a smaller, more understated manner so as not to detract from the wayfinding.
- Vehicular directional signs should be located at major vehicular intersections and at strategic locations to also act as identity markers for pedestrians once they have parked their car.
- The placement of directional signs shall maintain sight lines.
- Pedestrian directional signs are highly encouraged in areas of high pedestrian activity.

Parking Entry Examples

Directional Signage Examples

Source: Ayers Saint Gross

Thames Street

Source: Ayers Saint Gross

Eckerd College

7.2.6. Tiered Development & Views

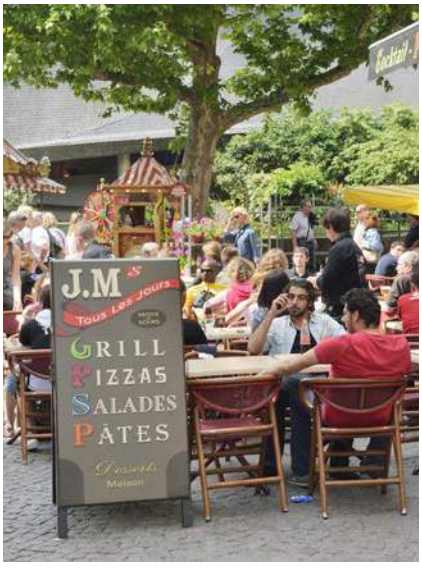
Slopes and stunning viewsheds are a singular feature of the UI District site—and the proposed plan will leverage these features to create unique and remarkable environments. The UI District site is largely graded to follow the natural contours and maintain three existing canyons, creating key landscape amenities including a network of canyon and rim trails. Blocks in the Plan are tiered to create viewsheds throughout the UI District. In particular, buildings along the Plan's southern edge are all sited to maximize view corridors and offer sites for spectacular meeting and assembly spaces.

Temporary Buildings

Source: WHA

7.2.7. Interim Buildings & Places

Given that multiple university partners will likely grow on the site over time, the UI District is essentially "incubating" its academic footprint in a non-traditional way. In the Plan's early stages, temporary and interim facilities will play a critical role in this process since most university footprints will likely be small and informal. This situation mandates the need for early phase projects and programming that encourages robust academic-innovation assemblies, events, and symposia. Ideally these facilities will also serve a "visitor center" function—drawing potential partners and visitors to the site years ahead of full build-out. Special care should be given to creating at least a few social hubs—food, entertainment or informal programming—that will draw both outside innovators and also existing neighbors.



Source: iStock

Source: iStock

Source: Ayers Saint Gross

Pratt Street

7.3. Site Planning & Building Placement

This section provides guidelines for block size, massing, building design, and landscape design to "break down" the scale of larger blocks and buildings to ensure pedestrian-oriented development and a high-quality pedestrian realm.

7.3.1. Mixed Use Facilities—"Open Chassis"

The urban nature of the UI District mandates a very different set of design guidelines from conventional academic environments. Here, while a unity of scale is desirable, a diversity of styles is also appropriate. From this perspective, the UI District guidelines are more akin to Form-Base Code that encourage coherent and harmonious massing, street walls, and public spaces, yet do not dictate specific styles or limited palette of colors and materials. This plan aspires to foster an authentic urban character that only arises from a diverse set of institutions, landowners and design teams working over time.

With that said, one coherent theme to future UI District development is "mixed use"—a broad, strategic goal that new UI District Plan will promote coordinated, urban cityscapes de-emphasizing physical design differences generated by disparate lands uses. Going forward, the majority of UI District buildings, whether they are

Source: Ayers Saint Gross

academic, corporate and/or residential buildings will reinforce defined street edges, squares, and public spaces irrespective of use. With the exception of residential structures, most buildings will be conceived as "open chassis" facilities that can accommodate a wide range of academic and non-academic users who change easily over time and wherever appropriate, co-locate in the same building footprint. In fact, it is the ability to accommodate a wide range of users—including ground-level spaces—that will define the UI District Plan.

Highly specialized and/or monumental structures like libraries and athletic facilities will occur in specified locations that preserve, enhance and reinforce the character of the overall district.

Characteristics contributing to a successful mixed-use setting include:

- Strong relationships between building form, street, and pedestrian walks.
- Building types that combine academic, employment, retail, service, and social uses.
- Architecturally interactive building facades.
- Activated pedestrian realm highlighted by plazas and connected spaces.
- Framing of internal and external views.

Pedestrian connections, variety of building form, parking hidden behind

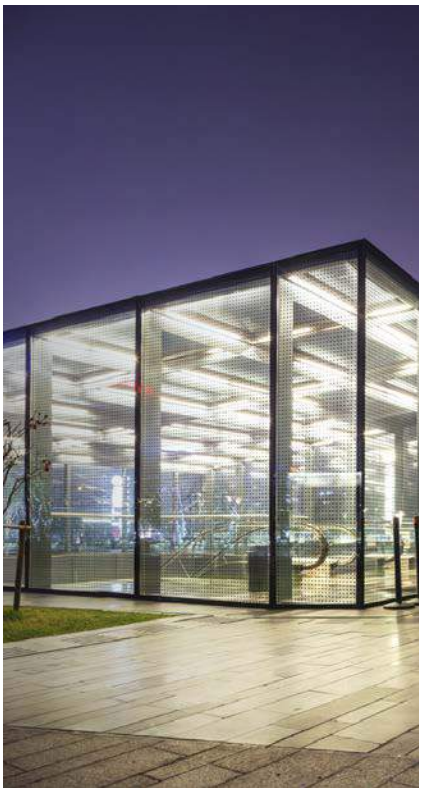
7.3.2. Block Planning & Pedestrian Connections

Building placement, massing, and facade details are essential to creating an aesthetically interesting place for pedestrian and business activity. Block development should support pedestrian connections to public walks, transit stops, and adjacent Villages:

- Encourage coordination between parcels for building scale, massing, architecture, and pedestrian amenities.
- Provide connectivity between buildings and through Transects to provide shorter distances between destinations.
- Incorporate appropriate Crime Prevention Through Environmental Design (CPTED) features in space design such as territorial reinforcement, strategic natural surveillance, well-lit spaces, and appropriate maintenance.
- Arrange buildings to create a variety of outdoor spaces including courtyards, plazas, squares, eating areas, arcades and/or usable open spaces.
- Consider sheltering walkways through architectural treatments, and/or landscape.
- Clearly identify the main building entry, if applicable, and distinguish it from the rest of the building.

Source: Ayers Saint Gross

University of South Florida Health and Wellness



Source: iStock

7.4. Innovative Architecture

Innovative architecture will play a central role in the UI District vision making it essential that future development exhibits design excellence on several fronts: aesthetics, emerging space planning trends, building technology and sustainability.

When completed, the UI District will offer one of the densest and most dynamic communities in the CaliBaja region—so its architecture must express this dynamism and the innovative energy of its students and entrepreneurs. Like many parts of Southern California, the UI District site calls out for a contemporary design vocabulary that features high performance building technologies and emerging pedagogic and work environments. The San Diego region has a rich tradition of modern and contemporary architects—work ranging from Irving Gill to Rob Wellington Quigley—that couples simple, prismatic forms with large openings, often articulated with trellises and shading devices.

Source: iStock

Source: WHA

7.4.1. Parking

Parking will define future growth patterns in the UI District. Like most neighborhoods in Chula Vista, the UI District will rely heavily on passenger cars for local and regional mobility—at least in the near term. This in turn will drive the need for extensive on-site parking facilities.

Several proposed planning features—mixed-use residential developments, complete streets with dedicated bike lines, and eventually larger factors like the planned BRT and the rise of autonomous vehicles—promise to reduce these requirements. However, parking will remain a major physical feature of the UI District Plan.

All parking facilities must be sited and designed to limit negative visual and physical impacts. Wherever possible, these facilities should be incorporated into building footprints and screened to enhance their presence in the urban fabric. While the

Source: WHA

site's dramatically sloping grade will allow for discreet pads of underground parking, strategic parking goals will focus on collecting cars at the UI District boundaries along Hunte Parkway and Orion Avenue.

At full build-out, the UI District aspires to house most cars in some sort of structured solution. However, in the short term, surface parking lots will likely play a role.

Three types of parking occur in the UI District:

- On-Street Parking
- Surface Parking Lots
- Parking Structures/Underground Parking

A. On-Street Parking

Parallel parking will line many of the UI District streets as part of the broader complete streets program. Street trees and bulb-outs to be added where appropriate.

Source: WHA

University of California, San Francisco

B. Surface Parking Lots

Parking lots should have landscape edges with trees planted every 8 to 10 spaces.

- Locate surface parking lots behind or to the side of buildings to reduce their frontage on the public street.
- Avoid designing surface parking lots that exceed 100 feet in length along the public street frontage (except for temporary surface lots on vacant sites slated for future development).
- Design entries into parking lots to be convenient and easy to find through location and/or signage.
- Provide adequate vehicle stacking distance at entrances to reduce traffic impacts on public streets.

Source: WHA

University of California, San Francisco

Source: WHA

C. Parking Structures/Underground Parking

Parking structures including underground parking should be screened with architectural features to match surrounding buildings, retail and/or related program space on ground level, entrances off side streets bundled with service areas. Parking structures include any multi-level garage or structure designed to serve one or more buildings or land use. Parking structures shall:

- Clearly delineate vehicular and pedestrian entries, and separate them where feasible.
- Share parking among uses.
- Clearly mark reserved and guest parking, where applicable.
- Incorporate a degree of transparency to permit light and visibility into the structure.
- Control vehicle headlight and rooftop lighting spill-over.
- Promote defensible space safety including warm lighting, ample heights, and clearly-defined pedestrian corridors.

Source: iStock

Source: Ayers Saint Gross

Towson University

7.5. Plazas & Walks

The design and prevalence of pedestrian spaces is key to the vitality of the UI District. Plazas and walks are open spaces designed for public or private use and defined by surrounding buildings, streets or open spaces. Their primary function are to encourage social interaction and activities, provide relief and relaxation, expand and reinforce the pedestrian realm and contribute to the livability and amenities of the UI District.

For ages, European squares and plazas have provided urbanites places to meet, trade, and celebrate. To reinforce the innovation of the UI District, plazas are not merely leftover areas between buildings, they should add to the quality of urban living.

Source: iStock

- Provide areas for seating, shade, water or sound features.
- Incorporate active and passive amenities that could allow for regular programmed use of the spaces and special events.
- Incorporate practical features such as lighting, moveable seating, electrical outlets, and other simple infrastructure, to support future flexibility and encourage a wide range of uses.
- Provide bicycle racks.
- Reflect and reinforce the character of its location.
- Frame the plazas with architectural treatments that incorporate transparent windows, entrances that are directly accessible from the sidewalk, articulated facades and human-scaled elements that encourage pedestrian activity.

Source: WHA

Source: iStock

Source: iStock

Source: Ayers Saint Gross

Towson University

Source: Ayers Saint Gross

University of North Carolina

7.6. Pedestrian Realm Elements

Pedestrian spaces are a key design feature that sets the activity-level tone for the UI District. Promotion of pedestrian activity requires generous sidewalks and amenities such as street furniture, wayfinding, passive and active spaces, and lighting.

Bicycles are an intrinsic component of the circulation system and should be accommodated safely and appropriately with easily accessible way finding and secure parking.

7.6.1. Enhanced Paving

Design hardscape areas to unify the development and to emphasize public spaces. Distinctive paving treatments shall give visual cues to users.

- The use of brick, stone, textured concrete, tile, or other decorative pavers is encouraged in plazas and common open spaces.
- The use of permeable surfaces is recommended to reduce urban runoff.
- Painted paving surfaces should not be used except to indicate traffic lanes or parking spaces.

Source: iStock

7.6.2. Street Furniture

Street furniture includes all of the various objects generally found adjacent to the street such as seating, trash receptacles, bus shelters, bike racks, mailboxes, and similar functional or decorative elements. Several methods shall be used to reduce visual clutter, eliminate location conflicts, and enhance the community theme:

- Select furniture from a community list established by the master developer and approved by the City Engineer to ensure a consistent style and theme.
- Utilize compatible color, style, and materials for each item.
- Locate furniture so as not to conflict with public utilities and pedestrian walks.
- Consider furniture in the context of other design elements such as paving and landscaping.
- Locate furniture in locations that are safe and convenient for pedestrians, bicyclists, and nearby uses.

Source: iStock

7.6.3. Lighting

Lighting for the UI District should provide interesting nighttime lighting that provides for the security and safety. Lighting plans shall be provided as part of each Design Review application. Four basic principles shall be considered:

- Promote public safety.
- Reduce or eliminate light pollution.
- Minimize energy use.
- Provide appropriate fixture style and scale for the different uses.

The size and scale of fixtures shall depend on the intended use. For instance, major arterial streets such as Hunte Parkway, will be lit with the City standard street lights on tall concrete poles, while pedestrian areas such as plazas and walks will be lit with luminaires chosen for their human-scale and aesthetics.

Source: Ayers Saint Gross

University of Arizona Health Science Education Building

7.7. Edge Development Design

The UI District, located at the edge of the Otay Ranch, has dramatic natural topography and overlooks the regional open space. The built environment should respond to this natural topography by providing contour grading and tiered building forms suitable for edge development adjacent to the regional open space (refer to Chapter 8 Grading). The design should.

- Take advantage of public views into, across, and from the District in the design of public spaces and orientation of buildings to create high-impact, visual "markers."
- Incorporate special building or site elements at key vistas sites.

Source: Ayers Saint Gross

Travel Plaza Cheaspeake House

Source: WHA

Source: Ayers Saint Gross

Pratt Street

7.8. Walls & Fences

Walls and fences should be the least visible element of the UI District. Use of these features should be limited to necessary use for wayfinding, security, screening of services, division of incompatible uses, and along the Edge to protect the OVRP open space or for fire protection. Trails and open space fencing along the preserve interface shall consist of lodge railing in accordance with the Preserve Edge Plan (Appendix D).

- Where walls and fences are used for the above listed reasons, design shall be inconspicuous, and cohesive with the architectural design and materials of the associated buildings.
- Except where used for necessary security, walls and fences should not be located between the pedestrian realm and a building.

Source: WHA

Source: WHA

7.9. Landscape

Landscape provides environmental benefits by creating shade, reducing heat island effect, filtering pollutants and assisting with storm water management. Trees and planters contribute to safer sidewalks by buffering pedestrians and/or bicyclists from vehicular traffic allowing the streets to contribute to the open space network of the District than merely a circulation element.

Landscaping should be used to define building entrances, key activity hubs, focal points, and parking lots. Landscape may also be used to define groups of buildings, reinforce campus identity, and/or provide thematic continuity throughout the entire District.

Street trees are the most important element of an enhanced streetscape. Size, type, pattern, and location of street trees should reflect the thematic intent of the street and reinforce the overall feel of the community. Street trees should be chosen for their ability to provide shade and maintain a visual field at pedestrian level.

Landscape planting should exhibit an effective contribution to crime prevention. Shrubs that create hiding places should not be placed in areas of pedestrian movement, such as along walkways and building entrances.

Source: WHA

Source: WHA

University of California, Irvine

7.10. Water Conservation & Quality

All landscape plans shall incorporate water conservation techniques and the thoughtful placement of water quality features. Drainage should be considered early in the design process to facilitate the requirements for Water Quality Management Plans (WQMPs) and Standard Urban Storm Water Mitigation Plans (SUSMPs) while contributing to the overall character of the landscape design.

- Plants should be grouped in high and low maintenance zones and shall coordinate with irrigation plans to minimize the use of water and the placement of irrigation tubing.
- All landscaped areas should have an automatic programmable irrigation system with a precipitation override mechanism, and appropriate valves and sprinkler heads for the proposed landscaping.
- Irrigation systems should be designed to apply water slowly to allow plants to be deep watered and to reduce runoff.
- Use of native and low water plants in conjunction with an efficient water system, such as drip irrigation, is strongly recommended.

Source: WHA

7.11. Service & Utility Areas

Due to the strong emphasis on pedestrian activity, location and screening of unsightly service and utility areas is critical to ensuring a comfortable pedestrian atmosphere. Appropriate loading and service areas shall be provided for each block or building as appropriate. Loading and service areas shall be located away from the primary street frontage. Shielding the loading/service areas by the use of walls or landscape shall be employed to limit views. Screening of mechanical equipment, waste enclosures, service areas and other service-oriented building necessities shall be integrated into the site and building design.

- Locate waste containers away from public rights-of-way and building entries.
- Sensitively locate and screen rooftop mechanical equipment so they don't dominate the building appearance.
- Install exterior on-site utilities underground, where feasible.
- Screen and incorporate required above ground utilities into architecture or landscape whenever possible.
- Locate electrical equipment in the interior of a building whenever practical, where impractical, screen from public view with walls or landscape.
- Site service vehicle access to minimize conflict with primary pedestrian or bicycle circulation within the District.